

**EPA Superfund
Record of Decision:**

**ABERDEEN PESTICIDE DUMPS
EPA ID: NCD980843346
OU 05
ABERDEEN, NC
09/16/1997**

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DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Aberdeen Pesticide Dumps Site
Operable Unit Five (OU5)
Route 211 Area
Aberdeen, North Carolina

Statement of Basis and Purpose

This decision document presents the selected interim remedial action for OU5 (groundwater) at the Aberdeen Pesticide Dumps Site in Aberdeen, North Carolina. The selected interim remedial action addresses the Surficial aquifer at the Route 211 Area only and was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for OU5.

The State of North Carolina concurs with the selected interim action.

Assessment of the Site

Actual or threatened releases of hazardous substances from the Route 211 Area, if not addressed by implementing the response action selected in this interim action Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

This interim remedial action employs the use of one extraction well and a carbon adsorption treatment system to extract and treat the highest concentrations of pesticide-contaminated groundwater from the Surficial aquifer at the Route 211 Area. Treated groundwater will be discharged via an infiltration gallery system. The purpose of this interim remedial action is to minimize the migration of contaminants from this aquifer into lower aquifers, and to initiate groundwater restoration while the Remedial Investigation/Feasibility Study (RI/FS) and post-RI/FS activities for the entire OU 5 are completed.

The major components of the Selected Remedy are as follows:

- Extraction of the highest concentrations of contaminated groundwater from the Surficial aquifer using one extraction well;
- Treatment of contaminated groundwater using a carbon adsorption system; and Discharge of treated groundwater via an infiltration gallery system.

Statutory Determinations

The selected interim remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to this interim remedial action and is cost-effective. Although this interim action is not intended to address fully the statutory mandate for permanence and treatment to the maximum extent practicable, this interim action does utilize treatment and thus is in furtherance of that statutory mandate. Because this action does not constitute the final remedy for OU5, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, and/or volume as principle element, although partially addressed in this remedy, will be addressed by the final response action. Subsequent actions are planned to address fully the threats posed by conditions at the Route 211 Area. Because this remedy may result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of final remedial action to ensure that the remedy continues to provide adequate protection to human health and the environment.

**RECORD OF DECISION
DECISION SUMMARY**

1.0 SITE NAME, LOCATION, AND DESCRIPTION

1.1 Site Location

The Route 211 Area (Figure 1) is located approximately 1,000 feet southwest of Route 211 East adjacent to the Aberdeen and Rockfish Railroad (ARRR), one mile east of Aberdeen (35!07'02" North Latitude and 79!23'41" West Longitude). The Route 211 Area is an old sand mining depression or pit approximately 80 feet in diameter along its short axis and approximately 8 to 20 feet below the surrounding topography. The elevation of the perimeter of the basin is between 440 and 450 feet above mean sea level (msl).

1.2 Topography and Surface Drainage

The topography of the Route 211 Area is generally flat with depressions and hills created from historic sand mining operations. Topography and surface drainage at the Route 211 Area is illustrated on Figure 2. The Route 211 Area comprises a small sand mining depression. Surface runoff in the immediate vicinity of the Area predominantly flows into the depression. The nearest surface water body is a localized area containing intermittent ponded water to the southeast of the Area. This surface water body is the result of drainage originating topographically upslope of the Area. The next surface water feature is an intermittent creek approximately 500 feet southeast of the Area. This creek, known as Bull Branch, flows south-southwest intermittently for approximately 0.8 miles until it becomes a perennial stream. Along this intermittent stream are two man-made ponds approximately 800 feet and one-half mile from the Route 211 Area. This stream continues to flow southward for approximately 3.3 miles, where it enters Quewhiffle Creek.

1.3 Soils

The Coastal Plain sediments overlying the bedrock units range in thickness from approximately 300 feet beneath the upland areas, to less than 100 feet beneath the principal drainage features. The geology beneath the Aberdeen area contains five lithologic units, which range in age from Precambrian to Eocene. The investigation at the Route 211 Area involves three of these units. From oldest to youngest, these units are: the Cape Fear and Middendorf Formations of late Cretaceous age; and the Pinehurst Formation of Eocene age.

The Pinehurst Formation extends from land surface down to the elevation of approximately 410 feet mean sea level (msl), and is composed of predominately fine to coarse, brown, tan, red and gray sands, with interbedded silts and clays having similar colors. This unit ranges from 8 to 50 feet in thickness. A silty, clayey sand, or sandy clay unit occurs near the base of the formation, just above the Middendorf Formation contact. Where present, this low permeability unit ranges from 2.5 to 9 feet in thickness, and contains humic materials such as wood fragments, grass, peat, and other plant debris at several locations.

The top of the Middendorf Formation is usually marked by a light gray to white, hard, brittle silty clay. This clay is typically mottled pale red to dark yellowish-orange. Where present, this low permeability unit ranged in thickness from approximately 0.5 to 22 feet, is moist to dry, and is commonly overlain by a layer of purple to pink coarse sand and/or fine gravel.

Soil borings in the area of the proposed extraction and infiltration system confirm that the Surficial aquifer is confined by an uppermost clay layer which is laterally continuous across this area.

1.4 Hydrogeology

The hydrogeologic framework of the Aberdeen vicinity is composed of four aquifers which are separated by confining beds or semi-confining beds. These aquifers, in order from the top, are: the Surficial aquifer; the Upper Black Creek aquifer; the Lower Black Creek aquifer; and the Cape Fear aquifer. Since this interim action is for the groundwater in the Surficial aquifer only, the discussion on this section will be limited to that aquifer.

The Surficial aquifer of the Sand Hills is equivalent to the Pinehurst Formation and is the watertable aquifer that caps the highest hilltops across the Aberdeen area. However, the Black Creek aquifers (both Upper and Lower) can also be locally unconfined, but these areas are generally near points of discharge (streams and valleys) and should not be mistaken for the Surficial aquifer on the hilltops. The Pinehurst Formation, which contains the Surficial aquifer, dips to the southeast at approximately 6 feet per mile. Even though the estimated transmissivity of this unit is moderate (< 1,000 sq.ft. per day), the Surficial aquifer is not used as a primary source of drinking water. Recharge to the aquifer occurs as rainfall across outcrop areas and discharge occurs as seeps and springs along stream valleys and as leakage to the underlying Black Creek aquifers.

1.5 Groundwater Flow Direction

The water map of the Surficial aquifer at the Route 211 Area is shown on Figure 3. The map presents the configuration of the groundwater surfaces as they were measured on October 26, 1995. Based upon these measurements, the groundwater flow direction in the Surficial aquifer was estimated to be toward the west-southwest.

1.6 Demography and Land Use

The 1990 Census estimated the population of Aberdeen, North Carolina to be approximately 2,700 people occupying approximately 1140 households. The Route 211 Area is located in a sparsely populated area approximately one mile east of Aberdeen. The Area is zoned industrial, since it is included in a strip of land adjacent to the Aberdeen & Rockfish Railway which has an industrial zoning. The surrounding land generally consists of pine woods with surface depressions created by sandmining. Three commercial/industrial facilities are located within 2,000 feet of the Area.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 Site History and Enforcement Activities

The Potentially Responsible Parties (PRPs) identified for this area are Novartis Crop Protection, Inc. (former Ciba-Geigy Corporation), and Olin Corporation. During their operation of a pesticide formulation plant on Route 211 (The Geigy Chemical Plant) east of the Town of Aberdeen, corporate predecessors to the PRPs used the Route 211 Area for disposal of wastes from that plant. These wastes contained pesticide and pesticide constituents. On March 31, 1989, pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300. The Route 211 Area is one of the five non-contiguous areas comprising the Site

In response to a release or substantial threat of release of hazardous substances at or from the Site, EPA commenced on June 30, 1987, a Remedial Investigation and Feasibility Study (RI/FS) for the Site, including the Route 211 Area. EPA completed its initial Remedial Investigation at the Site on April 12, 1991. During that investigation, EPA determined that the surface water, groundwater and sediments at the Site required further investigation. EPA designated the groundwater at all five Areas as Operable Unit Three (OU3). EPA conducted further investigation of OU3 and completed a Feasibility Study concerning OU3 on May 3, 1993. During that study, EPA determined that further investigation of the groundwater at the McIver Dump and Route 211 Areas was necessary. EPA designated the groundwater at those two Areas as Operable Unit Five (OU5). Effective March 21, 1994, the PRPs entered into an Administrative Order on Consent (AOC) with EPA concerning performance of the RI/FS for OU5. The RI report for OU5 was completed by the PRPs

and approved by EPA on June 2, 1997.

3.0 COMMUNITY PARTICIPATION HIGHLIGHTS

Pursuant to CERCLA § 113(k)(2)(B)(i-v) and § 117, the RI Report and the Proposed Plan for this interim action were released to the public for comment on July 2, 1997. These documents were made available to the public in both of the Administrative Record locations. Information repositories are maintained at the EPA Region 4 Docket Room and at the Aberdeen Town Hall in Aberdeen, North Carolina. In addition, the Proposed Plan fact sheet was mailed to individuals on the Site's mailing list on June 26, 1997.

The notice of the availability of these documents and notification of the Proposed Plan Public Meeting was announced in The Fayetteville Observer Times and The Pilot on July 2, 1997. A public comment period was held from July 2, 1997 through August 2, 1997. In addition, a public meeting was held on July 10, 1997, at the Aberdeen Fire Station. At this meeting, representatives from EPA answered questions about the Site and the remedial alternatives for the interim action under consideration. A response to the comments received during the comment period, including those raised during the public meeting, are addressed in the Responsiveness Summary, which is part of this Record of Decision. The Responsiveness Summary also incorporates a transcript of the Proposed Plan public meeting.

4.0 SCOPE AND ROLE OF RESPONSE INTERIM ACTION

Due to the length of time required to complete the RI/FS for the entire OU5 and the Remedial Design/Remedial Action (RD/RA) plans, and the possibility of further plume migration during this time, EPA believes that it was appropriate to initiate remedial action on the Surficial aquifer at the Route 211 Area. The selected remedy would begin groundwater cleanup while RI/FS and post RI/FS activities for the entire OU5 are completed. This interim action would initiate a reduction of potential risks to human health and the environment posed by the pesticide contaminated groundwater plume, but does not constitute the final remedial action for OU5. A final remedial action will be developed to fully address the principle threats posed by Site conditions following the conclusions of the RI/FS. Upon completion of the RI/FS, the groundwater treatment system embodied by this interim remedial action may be incorporated into the OU5 final remedy. The final remedy for this OU5 will be documented in a final Record Of Decision.

5.0 SUMMARY OF SITE CHARACTERISTICS

5.1 Nature and Extent of Contamination Overview

Since this interim action is for the groundwater in the Surficial aquifer at the Route 211 Area only, the discussion in this section will be limited to the Surficial aquifer at this specific area. Complete information about the nature and extent of the contamination can be found in the final IR report for OU5 located in the information repository.

In September 1993, Rust E&I (an environmental contractor) was employed by the Potentially Responsible Parties (PRPs) to implement a Preliminary Groundwater Assessment at the Route 211 Area. RI field activities were performed in phases beginning in November 1994 and consisted of Phases I, IIa, IIb, III, IVa, IVb, IVc, V, and VI.

- During Phase I, soil test borings were drilled at the Route 211 Area to characterize subsurface conditions and install groundwater monitoring wells in the Surficial aquifer.
- Phase IIa and Phase IIb, Direct Push Technology (DPT) field screening techniques were utilized to obtain continuous soil samples for lithologic characterization.
- Phase III, a combination of Hollow Stem Auger (HSA) and mud rotary drilling techniques were utilized to further assess the Surficial aquifer.
- Phases IVa, IVb and IVc field activities, a combination of DPT, HSA, mud rotary, and Rotosonic drilling techniques were used to characterize subsurface conditions, collect

Hydropunch groundwater samples, and install groundwater monitoring wells. During Phase IVa, one Hydropunch groundwater sample was collected from the Surficial aquifer. During Phase IVb, a potential extraction well was installed in the Surficial aquifer.

- Phase V, Hydropunch samples were collected in the Surficial aquifer.

Groundwater samples were collected from DPT locations and from permanent monitoring wells at the Route 211 Area. Selected samples were analyzed for Target Compound List (TCL) Pesticides, Target Analyte List (TAL) Metals, TCL VOCs (volatile organic compounds), and additional parameters including alkalinity, total dissolved solids, and hardness. In addition, several pesticides not included in the TCL pesticide list were analyzed including Ferbam, Sevin, Guthion, and Parathion.

Groundwater samples were collected from field screening locations using DPT and Hydropunch methods, from existing monitoring wells, DPT wellpoints, new piezometers and new monitoring wells.

A total of eight monitoring wells (designated RT-MW-04 through RT-MW-11) were installed into the Surficial aquifer at the Route 211 Area (Figure 4). Monitoring wells RT-MW-04 and RT-MW-05 were installed to assess groundwater quality directly downgradient of the source area and adjacent to the Aberdeen and Rockfish Railroad (ARRR) during Phase I. As a result of the groundwater flow direction, monitoring well RT-MW-06 was installed northeast of the Area to collect background groundwater quality data.

Based upon Phase IIa and IIb analytical test results, several additional monitoring wells were installed to more fully assess the extent of the contaminant plume. Monitoring well RT-MW-07 was installed to monitor groundwater quality along the northwestern perimeter, monitoring well RTMW-08 was installed to monitor the groundwater quality in the center, and monitoring well RTMW-09 was installed to monitor groundwater quality along the southeastern perimeter of the plume. Two monitoring wells were also installed to assess the groundwater quality in the downgradient direction; monitoring well RT-MW-10 was installed in a downgradient direction of the source area and monitoring well RT-MW-11 was installed in the farthest downgradient direction of the source area. HydropunchTM groundwater sample AT-HP-01 was collected on the east side of Bull Branch.

Based on the known location and extent of the source area, analytical test results of downgradient groundwater samples, and the absence of groundwater in the Surficial aquifer along the western perimeter of the study area, the extent of pesticides in the Surficial aquifer has been defined. A summary of the analytical test results are presented in the RI report available in the Information Repository.

No Ferbam, Sevin, Guthion, or Parathion was detected in any groundwater samples collected from the Surficial aquifer at the Route 211 Area. TCL pesticides which were not detected above reporting limits in groundwater samples from the Surficial aquifer were aldrin, chlordane, heptachlor epoxide, and methoxychlor.

The most frequently detected pesticides in the Surficial aquifer were alpha-BHC, beta-BHC, delta BHC and 4,4'-DDE (Figure 4). Concentrations of these compounds decrease downgradient of the source area. The highest concentration of pesticides was detected in RT-MW-04, directly downgradient of the source area. Pesticide concentrations then decreased by more than an order of magnitude in monitoring wells located south of the ARRR. Concentrations of these compounds decrease at locations hydraulically downgradient of the source area, indicating that the majority of contaminant mass resides close to the source area.

Wells 05-MW-01, -02, -03, and RT-MW-04 were sampled for TCL VOCs analysis. No VOCs were detected in any groundwater samples collected from the Surficial aquifer. Analytical results are presented in the RI report available in the Information Repository.

Some metals were detected in groundwater at the Route 211 Area. Based on the available Site data, EPA has decided that metals detected in groundwater will not be considered chemicals of concern at the Route 211 Area. Metals concentrations are considered to be consistent with background concentrations.

6.0 SUMMARY OF SITE RISKS

The formal Baseline Risk Assessment for the Route 211 Area has not been completed yet, but it will be available before the selection of the final remedy for OU5. The Agency's decision to initiate an interim remedial action at this Area is based on the data collected during the Site investigations. The data indicates that the highest concentrations of pesticide contamination are within the Surficial aquifer, and that this contamination is gradually moving into the lower aquifer. This interim remedial action would reduce further migration of pesticide contamination to the lower aquifers.

7.0 DESCRIPTION OF REMEDIAL ALTERNATIVES

The following remedial alternatives were selected for evaluation:

Alternative 1: No-Action

Alternative 2: Extraction of contaminated groundwater from the Surficial aquifer, treatment by carbon adsorption and discharge via an infiltration gallery system.

7.1 Alternative 1: No Action

CERCLA requires that the "No Action" alternative be considered. The No Action alternative provides the baseline for comparing existing Site conditions with those resulting from other proposed alternatives.

Under this alternative, EPA would take no action at the Site at this time to reduce further migration of contaminated groundwater from the Surficial aquifer into the lower aquifers while the RI/FS process is finalized.

There is no cost associated with this alternative.

7.2 Alternative 2: Extraction of contaminated groundwater from the Surficial aquifer, treatment by carbon adsorption and discharge via an infiltration gallery system.

This alternative will ensure that active treatment of contaminated groundwater in the Surficial aquifer at the Route 211 area would begin while the RI/FS and RD/RA for the entire OU5 is completed. Under this alternative, the highest concentrations of pesticide-contaminated groundwater will be pumped from the Surficial aquifer using one extraction well, thereby reducing further migration of contaminants from this aquifer into lower aquifers. Extracted groundwater will be treated using an activated carbon adsorption system. All treated groundwater will be discharged via an infiltration gallery system and will be allowed to infiltrate/percolate down through the soil back to the Surficial aquifer.

In order to develop the cost estimate for this alternative it was assumed that the system will be in operation for two years; and that an existing well will be used. Based on these assumptions the costs associated with this alternative are as follow:

Capital Cost:	\$274,302
Annual O&M Cost:	\$123,303/year
Present Worth Cost:	\$518,908

8.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A detailed comparative analysis using the nine evaluation criteria set forth in the NCP was performed on the remedial alternatives. The advantages and disadvantages were compared to identify the alternative with the best balance among these nine criteria.

8.1 Threshold Criteria

8.1.1 Overall Protection of Human Health and the Environment

Section 8.1.1 addresses whether or not a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

The "No Action" alternative is not protective of human health and the environment because it would not address the continued migration of contaminants from the Surficial aquifer into lower aquifers. Because the "No-Action" alternative would neither arrest the continued groundwater migration from the highly contaminated aquifer into the lower aquifers nor initiate the reduction of Site contaminants and the potential risk of further migration on any part of the plume, this alternative will not be considered further in this analysis.

The extraction and carbon treatment of contaminated groundwater from the Surficial aquifer presented, as Alternative 2, initiates restoration of the Surficial aquifer. Because the highest concentrations of pesticide contamination were detected in this aquifer, extraction and treatment of groundwater from this aquifer will mark the starting point toward overall protection of human health and the environment. At the same time, by extracting this mass of pesticides, further impact to the lower aquifers would be minimized.

8.1.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Section 8.1.2 addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for a waiver. The identified ARARs for this Site are listed in Section 9.2. The Superfund law requires that the remedial action for a site meets all ARARs unless a waiver is invoked. One of the circumstances under which a waiver may be invoked is if the remedial action is an interim measure where the final remedy will attain the ARAR upon completion.

Under Alternative 2, the Federal and State Groundwater Standards will be waived for the groundwater extraction component of the Alternative. This waiver is allowed because under this interim remedy only, contaminated groundwater will be extracted until the final remedy for the entire OU5 is selected and supercedes the interim action. Meeting specific Federal and State Groundwater Standards will be the objective of the final remedy for the entire OU5. The duration of this interim action should not exceed two years.

The carbon adsorption system will treat the extracted groundwater to meet the State permit requirements prior to being discharged via the infiltration gallery system. All State permit requirements for construction and use of infiltrations galleries must be met. The infiltration system must be modeled to show that the extraction and treatment system would be a "close-loop" system.

8.2 Primary Balancing Criteria

8.2.1 Long-Term Effectiveness and Permanence

Subsection 8.2.1 refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk and the adequacy and reliability of controls.

The goal of this interim action is short term in scope and its purpose is to prevent further migration of contaminants from the Surficial aquifer into lower aquifers while the RI/FS and post RI/FS activities for the entire OU5 are completed. Still, Alternative 2 is consistent with the Agency's long term goal of returning groundwater to its beneficial uses because contaminants are permanently removed as the Surficial aquifer is pumped in attempt to hydraulically control

the groundwater plume's migration from this aquifer into lower aquifers.

8.2.2 Reduction of Toxicity, Mobility, or Volume Through Treatment

This subsection refers to the anticipated performance of the treatment technologies a remedy may employ.

The groundwater extraction well/carbon adsorption filter system presented as Alternative 2 will reduce the toxicity, mobility, and volume of contaminants in the Surficial aquifer, by extracting pesticide contamination water for treatment by the carbon adsorption system. The activated carbon is considered to be the Best Available Treatment technology for removing pesticides from water.

8.2.3 Short-Term Effectiveness

Short-term effectiveness refers to the period of time needed to complete the remedy and any adverse impacts on human health and the environment that may be posed during the construction and implementation of the remedy until cleanup levels are achieved.

Alternative 2 is effective in the short-term because it will reduce further ground-water migration from the Surficial aquifer into lower aquifers while initiating reduction in toxicity, mobility, and volume of contamination until the final action is selected.

There should be NO adverse effects to human health or the environment from the installation or operation of Alternative 2.

The duration of this interim action should not exceed two years. At the conclusion of the RI/FS activities, the Agency will propose the final remedial action for the groundwater at the Route 211 Area. If Alternative 2, as presented on this interim action Record of Decision becomes a component of the final remedy for OU5, continuing operation is expected until the cleanup levels are achieved. As previously mentioned, the groundwater cleanup levels are not addressed in this interim remedy because such goals are beyond the scope of this action. The cleanup levels will be addressed by the final remedial action Record Of Decision for OU5.

8.2.4 Implementability

Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

The required construction technology for implementation of Alternative 2 is proven, and the necessary materials/services are readily available. The administrative requirements for implementation are manageable.

8.2.5 Cost

The total Present Worth Costs for the alternatives evaluated are as follows:

Alternative 1: \$0

Alternative 2: \$518,908

The Capital costs for Alternative 2 are estimated to be \$274,302. The Operation and Maintenance (O&M) costs for Alternative 2 are estimated to be \$123,303 per year. The duration of this interim action is expected not to exceed two years. The total present worth cost for Alternative 2 is estimated to be \$518,908.

8.3 Modifying Criteria

8.3.1 State Acceptance

EPA and the North Carolina Department of Environment, Health, and Natural Resources (NCDEHNR) have cooperated throughout the RI/FS process. The State has participated in the development of the RI/FS through comment on each of the various reports developed by EPA, and the Draft ROD and through frequent contact between the EPA and NCDEHNR site project managers. EPA and NCDEHNR are in agreement on the selected alternative. Please refer to the Responsiveness Summary which contains a letter of concurrence from NCDEHNR.

The NCDEHNR has participated during the development of all the remedial processes for this OU5 and concurs with this interim remedy.

8.3.2 Community Acceptance

EPA solicited input from the community on the Proposed Plan for this interim action. Although public comments indicated no opposition to the preferred alternative, some local residents expressed some minor concerns during the Proposed Plan public meeting. Please see the Responsiveness Summary which contains a transcript of the public meeting.

9.0 THE SELECTED REMEDY

Based upon consideration of the CERCLA requirements, the NCP, the analysis of the alternatives using the nine criteria, and public and State comments, EPA has selected an interim action remedy for the Route 211. The selected interim action for the Route 211 area is Alternative 2.

This alternative will ensure that active extraction and treatment of contaminated groundwater from the Surficial aquifer would begin while the RI/FS and RD/RA standard process continues. Under this alternative contaminated groundwater will be pumped from the Surficial aquifer thereby reducing further migration of contaminants from this aquifer into lower aquifers. Extracted groundwater will be treated using an activated carbon adsorption system. All treated groundwater will be discharged via an infiltration gallery system and will be allowed to infiltrate/percolate down through the soil back to the Surficial aquifer.

For the purpose of the cost estimate, it was assumed that the system will be in operation for two years, and that an existing extraction well will be used. Based on these assumptions the costs associated with this alternative are as follow:

Capital Cost:	\$274,302
Annual O&M Cost:	\$123,303/year
Present Worth Cost:	\$518,908

9.1 Performance and Treatment Standards

The performance standards for the selected remedy include, but are not limited, to the following standards.

Extraction System

The Surficial aquifer is the only aquifer involved in this interim action. The highest groundwater pesticide concentrations will be extracted from the Surficial aquifer using one extraction well. An electric submersible pump will be used to extract groundwater from the well. The need for additional extraction wells in the Surficial aquifer will be addressed in the final remedy for the entire OU5.

Treatment System

Activated carbon adsorption is considered to be the Best Available Treatment technologies for removing pesticides from water. A flow diagram of a typical extraction well/carbon adsorption treatment system is provided in Figure 5. All of the pesticides present in the groundwater to be extracted can be treated using activated carbon absorption. Routine analytical sampling of the influent and effluent from the canister(s) shall be conducted to determine when the carbon

canisters should be replaced. The exact configuration of the carbon treatment system will be determined during design.

Discharge

Treated water will be discharged via an infiltration gallery system. Discharge requirements will be documented in an infiltration gallery permit. Based on the groundwater modeling, all treated water can be distributed through the galleries and allowed to infiltrate down through the soils to the Surficial aquifer. The infiltration system shall be located upgradient of the extraction system to form a "closed-loop" system, as required by the State of North Carolina.

The duration of this interim action should not exceed two years. At the conclusion of the RI/FS activities for the entire OU5, the Agency will propose the final remedial action for groundwater at the Route 211 Area. If this interim remedy becomes a component of the final remedy for OU5, continuing operation is expected until the cleanup levels are achieved. As previously mentioned, the groundwater cleanup levels are not addressed in this interim remedy because such goals are beyond the scope of this action. The cleanup levels will be addressed on the final Record of Decision for the entire OU5.

9.2 Site Specific Applicable and Relevant and Appropriate Requirements (ARARs)

The Superfund law requires that the remedial action for a site meets ARARs unless a waiver is invoked. One of the circumstances under which a waiver may be invoked is if the remedial action is an interim measure where the final remedy will attain the ARAR upon completion. The remedy will comply with all the applicable and relevant and appropriate portions of the following Federal and State regulations.

40 CFR Parts 261, 262, 263, 264, and 268 promulgated under the authority of the Resource Conservation and Recovery Act (RCRA). These regulations are applicable to the management of hazardous waste, including treatment, storage and disposal.

North Carolina Administrative Code (NCAC) Title 15A, Chapter 13A, Regulations for the Management of Hazardous Waste promulgated under the authority of NC Waste Management Act. These regulations are applicable to the management of hazardous waste in the State of North Carolina.

NCAC Title 15A, Chapter 13B, Regulations for disposal of Solid Waste promulgated under the authority of the NC Hazardous Waste Commission Act. These regulations are applicable to the management of solid waste in the State of North Carolina.

NCAC Title 15A, Chapter 2, Subchapter 2L, Regulations governing classifications and water quality standards applicable to groundwater. Promulgated under the authority of the NC Water and Air Resources Act. These regulations are applicable to the protection of groundwater in the State of North Carolina. These specific regulations will be waived for the groundwater extraction component of the remedy only. This waiver is allowed because under this interim remedy only, contaminated groundwater will be extracted until the final remedy for the entire OU5 is selected and supercedes the interim action. Meeting this ARAR will be the objective of the final remedy for the entire OU5.

State permit requirements for construction and use of infiltrations galleries must be met.

10.0 STATUTORY DETERMINATIONS

Under CERCLA Section 121, EPA must select remedies that are protective to human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous waste as

their principal element. The following sections discuss how this remedy meets these statutory requirements.

10.1 Protection of Human Health and the Environment

The interim remedial action protects human health and the environment from exposure to Surficial aquifer contaminants. The groundwater extraction well/carbon treatment system presented as Alternative 2, initiates a reduction of risks from future exposure to contaminants in groundwater. Because the highest concentrations of pesticide contamination were detected in the Surficial aquifer, extraction and treatment of groundwater from this aquifer will mark the starting point toward overall protection of human health and the environment. At the same time, by extracting this mass of pesticides, further impact to the lower aquifers would be minimized.

10.2 Compliance with Applicable or Relevant and Appropriate Requirements

The Superfund law requires that the remedial action for a site meets all ARARs unless a waiver is invoked. One of the circumstances under which a waiver may be invoked is if the remedial action is an interim measure where the final remedy will attain the ARAR upon completion. The Federal and State Groundwater Standards will be waived for the groundwater extraction component of this interim remedy. This waiver is allowed because contaminated groundwater will be extracted until the final remedy for the entire Operable Unit 5 is selected and takes over the interim action, and not until the cleanup levels are met. (The duration of this interim action should not exceed two years). Meeting the Federal and State Groundwater Standards will be the objective of final remedy.

The scope of this proposed interim remedial action is to start cleaning up contaminated groundwater in the Surficial aquifer while RI/FS and post RI/FS activities for the entire operable unit are completed. The groundwater cleanup levels are not addressed in this interim remedy because such goals are beyond the scope of this interim action. The cleanup levels will be addressed on the final ROD for the entire Operable Unit # 5.

The carbon adsorption system will treat the extracted groundwater to meet the State permit requirements prior to be discharged into an infiltration gallery. A permit must be obtained for the use of an infiltration gallery. The infiltration system must be modeled to show that the extraction and treatment system would be a "close-loop" system.

10.3 Cost Effectiveness

The Capital costs for the selected interim remedy are estimated to be \$274,302. The Operation and Maintenance (O&M) costs for the remedy are estimated to be \$123,303 per year. The duration of this interim action is expected not to exceed two years. The total present worth cost for Alternative 2 is estimated to be \$518,908.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

This interim action does not constitute a final action for remediation of the groundwater at the Route 211 area. It will, however, be effective in reducing the toxicity, mobility, and volume of pesticide-contaminated groundwater extracted from the Surficial aquifer by treating the pesticides-contaminated groundwater with a carbon adsorption system. Selection of this interim remedy represents the best balance of tradeoffs with respect to pertinent criteria, given the limited scope of the action.

10.5 Preference for Treatment as a Principal Element

The selected interim remedy utilizes a carbon adsorption system as a means of treatment of the pesticides in the groundwater. By utilizing treatment as a significant portion of the remedy, the statutory preference for remedies that employ treatment as a principal element is satisfied.

APPENDIX A
RESPONSIVENESS SUMMARY

1.0 RESPONSIVENESS SUMMARY OVERVIEW

The U.S. Environmental Protection Agency (EPA) held a public comment period from July 2, 1997, through August 2, 1997, for interested parties to comment on the Proposed Plan for the interim action at the Route 211 Area. This area is part of Operable Unit 5 (OU5) for the Aberdeen Pesticide Dumps Site in Aberdeen, North Carolina. The Proposed Plan, included in Attachment A of this document, provides a summary of the Site's background information leading up to the public comment period.

EPA held a public meeting at 7:00 p.m. on July 10, 1997, at the Aberdeen Fire Station in Aberdeen, North Carolina to describe EPA's proposed interim alternatives for the Site. All of the comments received by EPA during the public comment period were considered in the selection of the interim action for the Site.

The Responsiveness Summary provides a summary of citizens' comments and concerns identified and received during the public comment period, and EPA's responses to those comments and concerns.

This Responsiveness Summary is organized into the following sections and attachments:

- 1.0 RESPONSIVENESS SUMMARY OVERVIEW: This section outlines the purpose of the public comment period and the Responsiveness Summary. It also references the background information leading up to the public comment period.
- 2.0 BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS: This section provides a brief history of the interests and concerns of the community regarding the Route 211 Area.
- 3.0 SUMMARY OF MAJOR QUESTIONS AND CONCERNS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES TO THESE COMMENTS: This section summarizes the comments received by EPA during the comment period including any verbal comments made during the public meeting on July 10, 1997. EPA's written responses to these comments are also provided.

ATTACHMENT A: Attachment A contains the Proposed Plan for the interim action at the Route 211 Area which was mailed to the information repository and to individuals on the Site mailing list on June 26, 1997, and distributed to the public during the public meeting held on July 10, 1997.

ATTACHMENT B: Attachment B includes the sign-in sheet from the public meeting held on July 10, 1997, at the Aberdeen Fire Station, Aberdeen, North Carolina.

ATTACHMENT C: Attachment C includes the address and phone number of the information repository designated for the Aberdeen Pesticide Dumps Site.

ATTACHMENT D: Attachment D includes a copy of the official transcript of the Public Meeting on the Proposed Plan for the groundwater interim action for the Route 211 Area.

2.0 BACKGROUND ON COMMUNITY INVOLVEMENT CONCERNS

2.1 Background on Community Involvement

The Interim Action Proposed Plan fact sheet was prepared and mailed to citizens on the Site's mailing list on June 27, 1997, announcing a public comment period of July 2 - August 2, 1997, and a public meeting on July 10th. A transcript of this meeting was prepared by a court report and a copy was placed in the information repository located in the Aberdeen Town Hall. A display ad was prepared and placed in both the Fayetteville Observer Times and The Pilot newspapers on July 2, 1997 and July 3, 1997, respectively. Also, EPA representatives met with the Interim City Manager to inform him of what we would be explaining at the evening meeting enabling him to be responsive to his constituents in the event he was unable to attend the meeting.

EPA representatives also met with representatives of the MooreFORCE TAG group and their consultant to go over the proposed interim action and to respond to their concerns.

EPA fact sheets covering Pump-and-Treat and Activated Carbon Treatment, as well as a brochure on Groundwater Cleanup at Superfund Sites was provided to attendees at the proposed plan public meeting. A copy of this same literature was also placed in the information repository.

There has always been an interest by the public in the Aberdeen Pesticide Dumps Site areas and meetings have been fairly well attended.

2.2 Community Concerns

The following major issues and concerns regarding the Site were expressed during the July 10, 1997, public meeting.

1. Is the chemical DDE a contaminant of concern on this Site?
2. How long would it take to clean up the aquifers?
3. Why the scope of the interim action is limited to the Surficial aquifer?

3.0 SUMMARY OF MAJOR QUESTIONS AND CONCERNS

3.1 Verbal Comments

The following is a summary of the verbal comments, concerns and questions raised by the attendees during the public meeting on July 10, 1997, together with EPA's responses.

COMMENT: A concerned citizen asked if the concentrations of the BHC isomers, and the chemical DDE detected in the Surficial aquifer exceed any of the established MCLs; and if not, why is EPA proposing cleaning up the aquifer?

RESPONSE: The BHC isomers detected in the Surficial aquifer are alpha, beta, delta and gamma. Of those BHC isomers, the only one that has an established MCL is gamma (0.2 parts per billion (ppb)). The MCL for gamma was not exceeded in any of the groundwater samples collected from the Surficial aquifer. DDE was detected in very low concentrations and it is not a contaminant of concern for this Site. The clean up of the Surficial aquifer is proposed by the Agency because some of the BHCs concentrations detected in the Surficial aquifer exceed preliminary risk calculations.

COMMENT: How long would it take to clean up the aquifer?

RESPONSE: Achieving a specific cleanup levels is not within the scope of this interim action. The goal of this interim action is to start pumping out and treating contaminated groundwater from the Surficial aquifer which contains the higher concentrations of contaminants in the whole Route 211 Area while the Remedial Investigation/Feasibility Study (RI/FS) and post-RI/FS activities for the entire OU5 are completed. After the RI/FS activities for the entire OU5 are completed, a final Record of Decision (ROD) will be issued. Achieving specific clean up levels will be the goal of the final ROD. The final ROD will document the final remedy for the entire OU5 including the estimated time frames for achieving cleanup levels.

3.2 Written Comments

The following are written comments submitted by MooreFORCE, together with EPA's responses.

COMMENT 1: MooreFORCE, Inc., strongly endorses EPA intentions to begin interim action at Route 211 Area, and encourages the agency to expedite negotiations and begin as soon as possible. However, the scope of the proposed interim action is too limited.

RESPONSE: Please see response to MooreFORCE's comment 3.

COMMENT 2: The Remedial investigation has revealed that contaminated groundwater has been detected not only in the surficial aquifer, but also in the upper and lower sections of the Upper Black Creek aquifer, and the Lower Black Creek aquifer. Why aren't these other contaminated aquifers also being addressed at this time with this proposed interim action?

RESPONSE: EPA is not addressing other aquifers at this time because the FS for the entire OU5 is not completed. The FS for the entire OU5 will address contamination above the cleanup levels in all the aquifers. As documented in the RI report, the highest concentrations of pesticides in the groundwater are in the surficial aquifer, therefore, EPA believes that it was appropriate to initiate restoration of the Surficial aquifer at this time, and not to wait until the FS report for the entire OU5 (all the aquifers) is completed. A copy of the final RI report is located in the information repository.

COMMENT 3: At a minimum, the scope of the Interim action should be expanded by adding (an) additional well(s) to more fully capture the "hot spots" in the surficial aquifer, before the contaminants have an opportunity to further migrate into the lower aquifer. The front end cost of the carbon filtration system design would not be greatly increased to expand the system's capacity. Nor should there be any delays in permitting an expanded action. Because the Remedial investigation has found that groundwater moving rapidly through the Surficial aquifer, at 635 feet per year, it is imperative that an expanded interim action be undertaken as soon as possible. It is much easier to capture and treat the more concentrated contaminants in the Surficial aquifer now rather than wait until the contaminants move down and spread out through the lower aquifers.

RESPONSE: Groundwater modeling performed as a part of the Route 211 Feasibility Study indicates that the additional Surficial aquifer recovery wells would not provide a measurable benefit toward the shortening of the anticipated remedial time frames under potential remedial actions for the lower aquifers. A measurable reduction in risk is likewise improbable. While some limited benefit of adding Surficial aquifer recovery wells is anticipated, EPA believes the additional recovery wells are not justified because of additional costs and probable delays to the implementation of this interim action. In part, this conclusion was reached because of the already significant degree of groundwater contamination in the lower aquifers, which would only be marginally affected by the addition of more recovery wells to the Surficial aquifer interim action. EPA agrees with the observation that at the Route 211 area, removal of the concentrated groundwater contamination close to the source area will be much easier than would be contaminant removal from more distant areas.

COMMENT 4: The Remedial investigation has revealed vertical hydraulic connections between each of the aquifers characterized at the Route 211 Area site. What is the possibility that the installation of monitoring wells has contributed to the cross-contaminated of the various aquifers? Any proposed interim actions must be sensitive to this issue to prevent exacerbating the movement of contaminants down through the aquifers. Also, the restarting of Municipal Well #13, which may effect the dynamics of groundwater flow and contaminant migration must be taken into account.

RESPONSE: The planned groundwater interim action will act to reduce vertical contaminant migration from the Surficial aquifer to the underlying Upper Black Creek aquifer. There is no concern about the planned interim action exacerbating vertical contaminant migration.

With regard to the concern expressed about monitoring well installation contributing to vertical contaminant migration, it is possible that a very short-term increase in vertical contaminant migration occurred during well installation. However, the volume of water (and mass of contaminants) that could have migrated vertically during the period of well installation is insignificant, relative to the movement of groundwater and contaminants through naturally occurring vertical migration pathways downgradient of the Route 211 source area. The EPA has performed modeling analyses which have compared the potential vertical contaminant migration around Municipal Well 13 to contaminant migration through the geologic formations near the Route 211 area. Municipal Well 13 is constructed such that vertical groundwater flow around that well is much greater than is any potential vertical groundwater flow around the Route 211 monitoring wells. EPA's modeling analyses indicate that naturally occurring vertical groundwater flow and

contaminant migration are orders of magnitude greater than are vertical groundwater flow and contaminant migration around Municipal Well 13. All monitoring wells installed during the Route 211 investigations were constructed to minimize vertical contaminant migration, in accordance with U.S. EPA guidance. There is no reason to believe that measurable amounts of contamination could migrate vertically as a result of the construction of the monitoring wells.

The operation of Municipal Well 13 should not have any measurable effect on the planned Surficial aquifer interim action at the Route 211 area. The operation of this well does have an effect on groundwater flow and contaminant migration patterns in lower aquifers, and will be considered by the EPA with regards to selection of a final remedial action for the Route 211 groundwater contamination.

ATTACHMENT A
PROPOSED PLAN FACT SHEET

SITE BACKGROUND

The Route 211 Area (Figure 1) is located approximately 1,000 feet southwest of Route 211 East adjacent to the Aberdeen and Rockfish Railroad (ARRR), one mile east of Aberdeen (35°07'02"N Latitude and 79°23'41"W Longitude). The Area is an old sand mining depression or pit approximately 80 feet in diameter along its short axis and approximately 8 to 20 feet below the surrounding topography. The elevation of the perimeter of the basin is between 440 and 450 feet above mean sea level (msl).

Materials, some of which contained pesticides, were discovered in a waste pile on the southwest slope of the depression. In 1986, approximately 100 cubic yards of pesticides and associated soil were removed from this Area, and disposed at the GSX facility in Pinewood, South Carolina. In 1989, approximately 200 cubic yards of similar material were discovered and subsequently removed and placed in the stockpile at the McIver Dump Area. The following pesticide compounds were detected in various samples taken from the waste pile and surface soils.

alpha- Benzenehexachloride (alpha BHC),
beta-BHC
gamma-BHC
delta-BHC
4,4'-dichlorodiphenyldichloroethylene (4,4'-DDE)
4,4'-Dichlorodiphenyldichloroethane (4,4'-DDD)
4,4'-Dichlorodiphenyltrichloroethane (4,4'-DDT)
heptachlor
chlordan.

Contaminated soil from the Route 211 area is being addressed as part of Operable Unit #1.

GROUNDWATER CHARACTERIZATION:

Summary of RI (Remedial Investigation) findings

Since this interim action is for the Surficial Aquifer at the Route 211 Area only, discussion of the RI findings in this fact sheet will be limited to the Surficial Aquifer at this specific area.

In September 1993, Rust E&I (an environmental contractor) was employed by the Potentially Responsible Parties (PRPs) to implement a Preliminary Groundwater Assessment at the Route 211 Area. RI field activities were performed in phases beginning in November 1994 and consisted of Phases I, IIa, IIb, III, IVa, IVb, IVc, V, and VI to obtain successful data that better represents the contaminants in the groundwater.

- During Phase I, soil test borings were drilled at the Route 211 Area to characterize subsurface conditions and install ground water monitoring wells in the Surficial Aquifer.
- Phase IIa and Phase IIb, Direct Push Technology (DPT) field screening techniques were utilized to obtain continuous soil samples for lithologic characterization.
- Phase III, a combination of Hollow Stem Auger (HSA) and mud rotary drilling techniques were utilized to further assess the Surficial Aquifer.
- Phases IVa, IVb and IVc field activities, a combination of DPT, HSA, mud rotary, and Rotasonic drilling techniques were used to characterize subsurface conditions, collect Hydropunch groundwater samples, and install groundwater monitoring wells.

During Phase IVa, one Hydropunch groundwater sample was collected from the Surficial Aquifer. During Phase IVb, HSA were used to install a potential extraction well in the Surficial Aquifer.

- Phase V, Hydropunch samples were collected in the Surficial Aquifer.
- No work was performed in the Surficial Aquifer during Phase VI.

Groundwater samples were collected from DPT locations and from permanent monitoring wells at the Route 211 Area. Selected samples were analyzed for Target Compound List (TCL) Pesticides, Target Analyte List (TAL) Metals, TCL VOCs (volatile organic compounds), and additional parameters including alkalinity, total dissolved solids, and hardness. In addition, several pesticides not included in the TCL pesticide list were analyzed including Ferbam, Sevin, Guthion, and Parathion.

Groundwater samples were collected from field screening locations using DPT and Hydropunch methods, from existing monitoring wells, DPT wellpoints, new piezometers and new monitoring wells.

A total of eight monitoring wells (designated RT-MW-04 through RT-MW-11) were installed into the Surficial Aquifer at the Route 211 Area (Figure 2). Monitoring wells RT-MW-04 and RT-MW-05 were installed to assess groundwater quality directly downgradient of the source area and adjacent to the Aberdeen and Rockfish Railroad (ARRR) during Phase I. As a result of the groundwater flow direction, monitoring well RT-MW-06 was installed northeast of the Area to collect background ground water quality data.

Based upon Phase IIa and IIb analytical test results, several additional monitoring wells were installed to more fully assess the extent of the contaminant plume. Monitoring well RT-MW-07 was installed to monitor groundwater quality along the northwestern perimeter, monitoring well RTMW-08 was installed to monitor the groundwater quality in the center, and monitoring well RTMW-09 was installed to monitor groundwater quality along the southeastern perimeter of the plume. Two monitoring wells were also installed to assess the groundwater quality in the downgradient direction; monitoring well RT-MW-10 was installed in a downgradient direction of the source area and monitoring well RT-MW-11 was installed in the farthest downgradient direction of the source area. HydropunchTM groundwater sample AT-HP-01 was collected on the east side of Bull Branch.

Based on the known location and extent of the source area, analytical test results of downgradient groundwater samples, and the absence of ground-water in the Surficial Aquifer along the western perimeter of the study area, the extent of pesticides in the Surficial Aquifer has been defined. A summary of the analytical test results are presented in the RI report available in the information Repository.

No Ferbam, Sevin, Guthion, or Parathion was detected in any groundwater samples collected from the Surficial Aquifer at the Route 211 Area. TCL pesticides which were not detected above reporting limits in groundwater samples from the Surficial Aquifer were aldrin, chlordane, heptachlor epoxide, and methoxychlor.

The most frequently detected pesticides in the Surficial Aquifer were alpha-BHC, beta-BHC, delta BHC and 4,4'-DDE. Concentrations of these compounds decrease downgradient of the source area. The highest concentration of pesticides was detected in RT-MW-04, directly downgradient of the source area. Pesticide concentrations then decreased by more than an order of magnitude in monitoring wells located south of the ARRR. Concentrations of these compounds decrease at locations hydraulically downgradient of the source area, indicating that the majority of contaminant mass resides close to the source area.

Wells 05-MW-01, -02, -03, and RT-MW-04 were sampled for TCL VOCs analysis. No VOCs were detected

in any groundwater samples collected from the Surficial Aquifer. Analytical results are presented in the RI report available in the Information Repository.

Some metals were detected in groundwater at the Route 211 Area. Based on the available Site data, EPA and NCDEHNR have decided that metals detected in groundwater will not be considered chemicals of concern at the Route 211 Area. Metals concentrations are considered to be consistent with background concentrations.

SCOPE AND ROLE OF PROPOSED INTERIM REMEDIAL ACTION

Due to the length of time required to complete the Remedial Investigation/Feasibility Study (RI/FS) for the entire Operable Unit and the Remedial Design/Remedial Action (RD/RA) plans, and the possibility of further plume migration during this time, EPA believes that it is appropriate to initiate remedial action on the Surficial Aquifer as soon as possible. The proposed interim remedial action would begin groundwater cleanup while RI/FS and post RI/FS activities for the entire operable unit are completed. This proposed interim action would initiate a reduction of risks to human health and the environment posed by the pesticide contaminated groundwater plume, but does NOT constitute the final remedial action for Operable Unit # 5. A final remedial action will be developed to fully address the principle threats posed by Site conditions following the conclusions of the RI/FS. Upon completion of the RI/FS, the groundwater treatment system embodied by this interim remedial action may be incorporated into the Operable Unit # 5 final remedy. The final remedy for this Operable Unit # 5 will be documented in a final Record Of Decision.

SUMMARY OF SITE RISKS

The formal Baseline Risk Assessment for the Route 211 Area has not been completed yet, but it will be available before the selection of the final remedy for Operable Unit # 5. The Agency's decision to initiate an interim remedial action at this Area is based on the data collected during the Site investigations. The data indicates that the highest concentrations of pesticide contamination are within the Surficial Aquifer, and that this contamination is gradually moving into the lower aquifers. This interim remedial action would reduce further migration of pesticide contamination to the lower aquifers.

SUMMARY OF ALTERNATIVES

The alternatives that EPA has evaluated for this Interim Remedial Action are described briefly below.

Alternative 1: No Action

Cost: \$0

The Agency requires that this alternative be evaluated at every site to serve as a basis for comparison for any other alternative(s) considered. Under this alternative, EPA would take no action at the Site at this time to reduce further migration of contaminated groundwater from the Surficial Aquifer into the lower aquifers while the RI/FS process is finalized.

Alternative 2: Extraction of contaminated groundwater from the Surficial Aquifer, treatment by carbon adsorption and discharge to an infiltration gallery;

Cost: \$274,302

Annual O&M Cost: \$123,303/year

Present Worth Cost: \$518,908

This alternative will ensure that active treatment of contaminated groundwater in the Surficial Aquifer would begin while the RI/FS and RD/RA standard process continues. Under this alternative ground-water will be pumped from the Surficial Aquifer thereby reducing further migration of contaminants from this aquifer into lower aquifers. Extracted groundwater will be treated using an activated carbon adsorption filter system. All treated groundwater will be discharged to an

infiltration gallery and will be allowed to infiltrate/percolate down through the soil back to the Surficial Aquifer. The duration of this interim action should not exceed two years.

Extraction System

The Surficial Aquifer is the only aquifer involved in this interim action. Pesticide-contaminated ground-water will be extracted from the Surficial Aquifer using an existing well. An electric submersible pump will be used to extract groundwater from the well. The need for any additional extraction well(s) in the Surficial Aquifer will be addressed in the final Record Of Decision.

Treatment System

Activated carbon adsorption is considered to be one of the Best Available Treatment technologies for removing pesticides from water. A flow diagram of the proposed extraction well/carbon adsorption treatment system is provided in Figure 3.

In order to ensure the proper performance of the carbon adsorption system, a number of preliminary treatment elements are proposed. The groundwater will be pumped through two backwashable screen filters for removal of suspended solids/particles. The first filter will be used to remove the larger particles, while the second filter will provide fine particulate removal. Suspended solids removal will increase the effective operating life of the carbon adsorbers, thus reducing overall operational costs. Removal of solids also minimizes the need for backwashing or backflushing of the adsorbers.

All of the pesticides present in the groundwater to be extracted can be treated using activated carbon absorption. Routine analytical sampling of the influent and effluent (from each canister) will be conducted to determine when the carbon canisters should be replaced.

Discharge

Treated water will be discharged to an infiltration gallery. Discharge requirements will be documented in an infiltration gallery permit.

Based on the groundwater modeling, all treated water can be distributed through the galleries and allowed to infiltrate down through the soils to the Surficial Aquifer. The infiltration system would be located upgradient of the extraction system to form a "closed-loop" system, as required by the State of North Carolina.

EVALUATION OF ALTERNATIVES

The proposed interim remedial action for the Route 211 Area is presented as Alternative 2 and involves the extraction of pesticides-contaminated ground-water from the Surficial Aquifer for treatment by an activated carbon adsorption system and discharge to an infiltration gallery. This section profiles the Preferred Alternative against the nine criteria which EPA uses to compare all proposed alternatives, noting how it compares to the "No- Action" alternative for each evaluation criteria.

1. Overall protection of human health and the environment: EPA assesses the degree to which each alternative eliminates, reduces, or controls threats to public health and the environment through treatment, engineering methods; or institutional controls.
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs: The alternatives are evaluated for compliance with all applicable state and federal environmental and public health laws and requirements that apply or are relevant and appropriate to the Site conditions.
3. Short-term effectiveness: The length of time needed to implement each alternative is considered, and EPA assesses the risks that may be posed to workers and nearby residents during construction and implementation.

4. Long-term effectiveness: The alternatives are evaluated based on their ability to maintain reliable protection of public health and the environment over time once the cleanup levels have been met.
5. Reduction of contaminant toxicity, mobility, and volume: EPA evaluates each alternative based on how it reduces (1) the harmful nature of the contaminants, (2) their ability to move through the environment, and (3) the volume or amount of contamination at the Site.
6. Implementability: EPA considers the technical feasibility (e.g., how difficult the alternative is to construct and operate) and administrative ease (e.g., the amount of coordination with other government agencies that is needed) of a remedy including the availability of necessary materials and services.
7. Cost: The benefits of implementing a particular remedial alternative are weighed against the cost of implementation. Costs include the capital (up-front) cost of implementing an alternative over the long term, and the net present worth of both capital and operation and maintenance costs.
8. State Acceptance: EPA requests state comments on the Remedial Investigation Report, Risk Assessment, Feasibility Study Report, and Proposed Plan, and must take into consideration whether the State concurs with, opposes, or has no comment on the preferred alternative.
9. Community Acceptance: To ensure that the public has an adequate opportunity to provide input, EPA holds a public comment period and public meeting and considers and responds to all oral and written comments received from the community prior to the final selection of a remedial action.

ANALYSIS

Overall Protection

The "No Action" alternative is not protective of human health and the environment because it would not address the continued migration of contaminants from the Surficial Aquifer into lower aquifers. Thus, the "No-Action" alternative would neither arrest the continued groundwater migration from the highly contaminated aquifer into the lower aquifers nor initiate the reduction of Site contaminants and the potential risk of further migration on any part of the plume.

The groundwater extraction and carbon treatment of contaminated groundwater from the Surficial Aquifer presented as Alternative 2, initiates restoration of the Surficial Aquifer. Because the highest concentrations of pesticide contamination were detected in this aquifer, extraction and treatment of groundwater from this aquifer will mark the starting point toward overall protection of human health and the environment. At the same time, by extracting this mass of pesticides, further impact to the lower aquifers would be minimized.

Compliance with ARARs

The Superfund law requires that the remedial action for a site meets all ARARs unless a waiver is invoked. One of the circumstances under which a waiver may be invoked is if the remedial action is an interim measure where the final remedy will attain the ARAR upon completion. The Federal and State Groundwater Standards will be waived for the groundwater extraction component of this interim action. This waiver is allowed because contaminated groundwater will be extracted until the final remedy for the entire Operable Unit # 5 is selected and takes over the interim action, and not until the cleanup levels are met. (The duration of this interim action should not exceed two years). Meeting the Federal and State Groundwater Standards will be the objective of the final remedy.

The scope of this proposed interim remedial action is to start cleaning up contaminated groundwater in the Surficial Aquifer while RI/FS and post RI/FS activities for the entire operable unit are completed. The final groundwater cleanup levels are not addressed in this

interim remedial action because such goals are beyond the scope of this interim action. The final cleanup levels will be addressed by the final remedial action for Operable Unit # 5.

The carbon adsorption system will treat the extracted groundwater to meet the State permit requirements prior to be discharged into an infiltration gallery. A permit must be obtained for the use of an infiltration gallery. The infiltration system must be modeled to show that the proposed extraction and treatment system would be a "close-loop" system.

Reduction of Toxicity, Mobility, or Volume of the Contaminants through Treatment

The groundwater extraction well/carbon adsorption filter system will reduce the toxicity, mobility, and volume of contaminants in the Surficial Aquifer, by extracting pesticide contamination water for treatment by the carbon adsorption system. The activated carbon is considered to be the Best Available Treatment technology for removing pesticides from water.

Short-Term Effectiveness

The interim remedial action proposed is effective in the short-term because it reduces further ground-water migration from the Surficial Aquifer into lower aquifers while initiating reduction in toxicity, mobility, and volume of contamination until the final action is selected.

There should be NO adverse effects to human health or the environment from the installation or operation of this interim action.

The duration of this interim action should not exceed two years. At the conclusion of the RI/FS activities, the Agency will propose the final remedial action for the groundwater at the Route 211 Area. If this interim action becomes a component of the final remedy for Operable Unit # 5, continuing operation is expected until the final cleanup levels are achieved. As previously mentioned, the final groundwater cleanup levels are not addressed in this interim remedy because such goals are beyond the scope of this action. The final cleanup levels will be addressed by the final remedial action Record Of Decision for Operable Unit # 5.

Implementability

The required construction technology for Implementation of Alternative 2 is proven, and the necessary materials/services are readily available. The administrative requirements for implementation are manageable.

Cost

The Capital costs for Alternative 2 are estimated to be \$274,302. The Operation and Maintenance (O&M) costs for Alternative 2 are estimated to be \$123,303 per year. The duration of this interim action is expected not to exceed two years. The total present worth cost for Alternative 2 is estimated to be \$518,908.

State Acceptance

The NCDEHNR has participated during the development of all the remedial processes for this Site and concurs with EPA's Proposed Interim Remedial Action.

Community Acceptance

Community acceptance of the Interim Remedial Action will be evaluated after the public comment period and will be described in the Interim Action Record of Decision (ROD).

The public is asked to comment on this proposed interim action during the public comment period which extends from July 2, 1997 through August 2, 1997. Questions and answers will be recorded to assist in the preparation of a report called "Responsiveness Summary", that will summarize citizen comments and EPA responses.

After the public comment period and the public meeting, EPA will review and consider all comments received from the community as part of the process of reaching the decision of the most appropriate remedial alternative for this interim action. EPA's final choice of a remedy for the interim action will be documented in the Interim Action ROD, which will include the Responsiveness Summary.

After the Interim Action ROD is signed by the EPA Waste Management Division Director, EPA will negotiate with the PRPs to design and implement the selected cleanup. At the end of the negotiation period, EPA will oversee the development of engineering design plans for the implementation of the selected remedial alternative.

Public Participation/Community Relations

As already stated in this fact sheet, EPA is conducting a 30-day public comment period beginning on July 2 and extending until midnight August 2, 1997 to receive written comments from citizens concerning this proposed interim remedial action. There will also be a public meeting on July 10th at the Aberdeen Fire Station to receive oral comments. If requested by an individual, a 30-day extension can be added to the comment period. If you prefer to submit written comments, please mail them postmarked no later than midnight August 2 to:

Ms. Diane Barrett
Community Relations Coordinator
North Site Management Branch
U.S.E.P.A., Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-3014

The Aberdeen Pesticide Dumps Site awarded an EPA Technical Assistance Grant (TAG) to the MooreFORCE, Inc. organization several years ago. They are very active in reviewing documents and providing comments to the Agency for this Site. If you are interested in joining this group of concerned citizens, please contact them at (704)692-7141.

The Aberdeen Community Liaison Panel meets the third Thursday of each month to discuss on-going activities occurring at the entire Site. The members of the panel consist of area citizens, businessmen, City/County/State and Federal government officials and representatives of the Potentially Responsible Parties. Citizens are invited to attend. The meetings begin at 5:30 PM at the Aberdeen Fire Station.

THE NEXT STEP: ONCE THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) FOR THE ENTIRE OPERABLE UNIT #5 IS COMPLETED

At completion of the RI/FS, EPA will develop another proposed plan which will describe the final remedial alternative for both the Route 211 and McIver Dump Areas. A copy of the proposed plan, which will include a brief description of the RI/FS results, will be mailed to interested parties and all persons who have requested to be included on EPA's mailing list for the Site. EPA will conduct another 30-day public comment period on the FS report and the proposed plan to provide an opportunity for public involvement in the final cleanup decision.

EPA will also conduct another public meeting to discuss the RI/FS and the proposed plan, and to address community questions and concerns. Questions and answers will be recorded to assist in the preparation of a "Responsiveness Summary".

After the public comment period and the public meeting, EPA will review and consider all comments received from the community as part of the process of reaching the final decision of the most appropriate remedial alternative, or combination of alternatives to address the groundwater contamination at the Route 211 and McIver Dump Areas. EPA's final choice of a remedy will be documented in the final ROD, which will include the Responsiveness Summary.

After the final ROD is signed by the EPA Waste Management Division Director, EPA will negotiate with the PRPs to design and implement the selected cleanup. At the end of the negotiation

period, EPA will oversee the development of engineering design plans for the implementation of the selected remedial alternative.

Information Repository Location

The Administrative Record and Information Repository files are available for public reading and are housed in the:

Aberdeen Town Hall
115 North Poplar Street
Aberdeen, N.C.

The repository contains copies of the reports developed during the Superfund process as well as general information about the Site and the Superfund Program.

Need More Information? Contact:

If you need more information about this Interim Proposed Plan for Operable Unit #5 at the Route 211 Area, please contact:

Luis E. Flores, EPA Remedial Project Manager
Diane Barrett, Community Relations Coord.
North Site Management Branch
U.S.E.P.A. Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-3014
Phone: 1-800-435-9233

ATTACHMENT B
PUBLIC MEETING SIGN-IN SHEET

IMG SRC 97182M>

ATTACHMENT C
INFORMATION REPOSITORY

ADMINISTRATIVE RECORD AND INFORMATION
REPOSITORY

FILES ARE AVAILABLE FOR PUBLIC READING AT:

ABERDEEN TOWN HALL
115 NORTH POPLAR STREET
ABERDEEN, NC

AND

EPA REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GA

ATTACHMENT D
PUBLIC MEETING OFFICIAL TRANSCRIPT

PUBLIC MEETING

ON

INTERIM ACTION PROPOSED PLAN

FOR GROUNDWATER

OPERABLE UNIT #5 AT

ROUTE 211 AREA

JULY 10, 1997

ABERDEEN FIRE STATION
HIGHWAY 1 AND PEACH STREET
ABERDEEN, NORTH CAROLINA

TAKEN BY:

WANDA B. LINDLEY, CVR/NCCR
NOTARY PUBLIC

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1 DIANE BARRETT: WELCOME TO TONIGHT'S MEETING.
2 WE THANK YOU FOR COMING AND FOR TAKING THE TIME OUT OF YOUR
3 DAILY BUSY SCHEDULES. I'M DIANE BARRETT, PUBLIC RELATIONS
4 COORDINATOR FOR E.P.A. FOR SITES IN NORTH CAROLINA.

5 NOW, WITH ME TONIGHT IS MR. LUIS FLORES.
6 WOULD YOU STAND, PLEASE, LUIS? HE IS THE PROJECT MANAGER
7 FOR OPERABLE UNIT 5, THE SUBJECT OF TONIGHT'S MEETING.

8 MR. BILL OSTEEN, HE IS A GROUNDWATER
9 SPECIALIST; HYDROGEOLOGIST, RIGHT?

10 BILL OSTEEN: RIGHT.

11 DIANE BARRETT: OKAY. AND MR. CHUCK MIKALIAN.
12 HE IS OUR ATTORNEY FOR THE SITE. AND, ALSO, LET'S SEE HERE.
13 WE'VE GOT MR. JIM CALDWELL, THE TOWN MANAGER HERE; AND MR.
14 JACK BUTLER AND MR. GROVER NICHOLSON FROM THE STATE OF NORTH
15 CAROLINA; AND WE'VE GOT HAROLD MOATS AND GARLAN WIGGINS FROM
16 THE COMPANIES -- THE POTENTIALLY RESPONSIBLE COMPANIES.
17 LET'S SEE HERE. AND OTHER DISTINGUISHED PEOPLE. WELL,
18 EVERYBODY'S DISTINGUISHED. WE WELCOME YOU ALL.

19 AS I SAID, THE PURPOSE IS TO DISCUSS AND TO
20 PROPOSE TO THE PUBLIC AN INTERIM ACTION FOR GROUNDWATER
21 TREATMENT AT OPERABLE UNIT 5 AT THE ROUTE 211 SITE, AND ONLY
22 THE GROUNDWATER AT OPERABLE -- AT 211.

23 TONIGHT IS A PROPOSED PLAN. ALTHOUGH IT'S AN
24 INTERIM PROPOSED PLAN MEETING, WE HAVE A COURT REPORTER.
25 SHE WILL BE TAKING A TRANSCRIPT OF THIS MEETING. AND AFTER

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1 WE FINISH OUR PRESENTATIONS, IF YOU WANT TO MAKE COMMENT OR
2 STATEMENTS, IF YOU'D PLEASE STAND AND GIVE YOUR NAMES SO
3 THAT SHE CAN HEAR YOU AND GET IT RIGHT; AND IF NOT, SHE'LL
4 JUST RAISE HER HAND AND ASK YOU TO REPEAT YOUR NAME. THANK
5 YOU FOR THAT.

6 MAKE SURE EVERYBODY SIGNS IN, AND GET
7 LITERATURE. AS YOU CAN TELL, I WAS EXPECTING A CROWD. I'VE
8 GOT A STACK OF LITERATURE BACK THERE AND IT'S NOT EVEN GONE.
9 THAT'S WHAT HAPPENS. THESE SITES THAT ARE AROUND FOR A
10 WHILE, IT'S KIND OF -- INTEREST KIND OF DWINDLES, I GATHER.

11 SINCE ALL OF YOU ARE EXPERTS IN THE PROCESS, I
12 WILL NOT GO THROUGH THAT FOR YOU TODAY. AND YOU KNOW WHERE
13 THE REPOSITORY IS IN THE TOWN HALL.

14 TONIGHT I DID BRING SOMETHING THAT IS A LITTLE
15 BIT DIFFERENT THAT APPLIED TO OUR MEETING. IT IS THE
16 GROUNDWATER BROCHURE, AND IT GIVES MORE SIMPLISTIC
17 INFORMATION ABOUT GROUNDWATER AND TREATMENT AND SO FORTH.

18 IF YOU NEED SOMETHING LIKE THIS FOR SCHOOL
19 KIDS, ALSO -- I DON'T KNOW IF YOU'VE NOTICED; I'VE GOT
20 LITTLE DIAGRAMS ON THE WALLS HERE AND THESE ARE VERY GOOD
21 FOR SCHOOL KIDS. ON THE BACK OF THEM THERE'S ALL KINDS OF
22 ACTIVITIES FOR THE TEACHERS -- THE SCHOOL TEACHERS TO
23 IMPLEMENT AND USE AT SCHOOL. SO IF ANY OF YOU ARE
24 INTERESTED IN THAT, LET ME KNOW AND I'LL GET YOU SOME
25 COPIES.

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1 LET'S SEE HERE. THIS IS QUICK. THANK YOU FOR
2 YOUR ATTENTION. I WILL NOW TURN IT OVER TO LUIS.

3 LUIS FLORES: WELL, THANK YOU, EVERYBODY, FOR
4 COMING HERE TO THIS MEETING. AS DIANE MENTIONED, WE ARE
5 GOING TO BE TALKING ABOUT INTERIM ACTION FOR THE OPERABLE
6 UNIT 5 AT THE ROUTE 211 AREA FOR THE SURFICIAL AQUIFER.

7 THE MAP THAT WE HAVE HERE BASICALLY JUST SHOWS
8 WHERE ALL THE AREA -- THESE SITE AREAS ARE. AS YOU CAN SEE
9 HERE, IT'S THE 211 AREA WHICH IS GOING TO BE THE FOCUS OF
10 THIS INTERIM ACTION.

11 WELL, I THOUGHT THIS TRANSPARENCY WAS GOING TO
12 SHOW BETTER. BUT IT'S IN HERE.

13 IT'S BASICALLY A FLOW CHART THAT SHOWS WHERE
14 THE O.U.'S OF THE ABERDEEN PESTICIDE DUMP SITE IS. O.U. 1
15 AND 4 IS SOILS. WE ADDRESSED SOILS AT THE TWIN SITES, THE
16 FAIRWAY SIX, THE FARM CHEMICAL, THE MCIVER DUMP, AND THE
17 ROUTE 211.

18 THE O.P. -- THE O.U. 2 WAS RENAMED AND IT'S
19 NOW O.U. 4 AND IT'S PART -- IT ADDRESSES SOIL.

20 O.U. 3 IS GROUNDWATER. THE R.P.R. [SIC] FOR
21 THAT IS JON BORNHOLM. AND O.U. 3 ADDRESSES THE TWIN -- THE
22 GROUNDWATER AT TWIN SITES, THE FAIRWAY SIX, AND THE FARM
23 CHEMICAL.

24 O.U. 5 WHICH IS GROUNDWATER -- AND IT'S THE
25 OPERABLE UNIT THAT I MANAGE -- ADDRESSES THE MCIVER DUMP AND

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1 THE ROUTE 211 AREA.

2 THE ROUTE 211 AREA, WE BASICALLY HAVE THREE
3 DIFFERENT AQUIFERS: THE SURFICIAL AQUIFER WHICH IS THE
4 FOCUS OF THIS INTERIM ACTION; THE UPPER BLACK CREEK AQUIFER
5 WHICH IS DIVIDED BY TWO OTHER -- WE CAN CALL IT SUB-
6 AQUIFERS; AND THEN THE LOWER BLACK CREEK AQUIFER.

7 THIS IS JUST A SCHEMATIC REPRESENTATION OF THE
8 AQUIFERS AT THE ROUTE 211 AREA. YOU CAN SEE THE SURFICIAL
9 IS THE ONE CLOSEST TO THE GROUND, THEN WE HAVE THE UPPER
10 PORTION OF THE UPPER BLACK CREEK AQUIFER AND THE LOWER
11 PORTION OF THE UPPER BLACK CREEK AQUIFER. AND THEN WE HAVE
12 THE LOWER BLACK CREEK AQUIFER.

13 HERE IN THIS FIGURE, THEY'RE SHOWN WITH --
14 WITH SOME DIVIDING CLAY UNITS BETWEEN THEM. OF COURSE, WE
15 KNOW THAT ALL THOSE AQUIFERS ARE SOME WAY OR ANOTHER
16 INTERCONNECTED -- INTERCONNECTED.

17 AS I SAID, TODAY WE'RE GOING TO BE TALKING
18 ABOUT INTERIM REMEDIAL ACTION FOR THE ROUTE 211 AREA FOR THE
19 SURFICIAL AQUIFER. WE'RE GOING TO BE DISCUSSING A LITTLE
20 BIT ABOUT THE GROUNDWATER CHARACTERIZATION. WE'RE GOING TO
21 MENTION A SUMMARY OF THE REMEDIAL ALTERNATIVES AND E.P.A.'S
22 PROPOSED ALTERNATIVE.

23 THE PURPOSE OF THIS INTERIM ACTION IS TO
24 INSTIGATE -- INITIATE REMEDIAL ACTION ON THE SURFICIAL
25 AQUIFER AT THE ROUTE 211 AREA WHILE THE REMEDIAL

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1 INVESTIGATION/FEASIBILITY STUDY, R.I./F.S., FOR THE ENTIRE
2 OPERABLE UNIT 5 IS COMPLETED.

3 WHILE WE KNOW THAT SURFICIAL AQUIFER IS THE
4 AQUIFER WITH THE HIGHEST CONCENTRATION, SO THAT'S BASICALLY
5 WHAT WE ARE INITIATING THIS INTERIM ACTION. WE ARE NOT
6 AFTER -- WE FOUND -- FOUND THAT OUT AFTER WE DID THE
7 INVESTIGATION.

8 AS PART OF THAT INVESTIGATION, GROUNDWATER
9 SAMPLES WERE COLLECTED USING THREE DIFFERENT METHODS: WE
10 INSTALLED SOME MONITORING WELLS; WE ALSO DID SOME SCREENING
11 USING DIRECT PUSH TECHNOLOGY, OR D.P.T., AND WE COLLECTED
12 SOME SAMPLES WITH THAT; AND USING HYDROPUNCH.

13 THE RESULT OF THE INVESTIGATION SHOWED THAT
14 THE MOST FREQUENTLY DETECTED -- DETECTED PESTICIDES WERE THE
15 -- ALL THE B.H.C.'S: ALPHA, BETA, DELTA, AND GAMMA -- AND
16 GAMMA BEING ALSO KNOWN AS LINDANE -- AND 4,4' D.D.E.

17 THERE WERE OTHER PESTICIDES THAT WERE DETECTED
18 IN THAT SURFICIAL AQUIFER, BUT IN A LOT LESS CONCENTRATIONS
19 AND FREQUENCY. WE ALSO DETECTED METALS, BUT WE -- ALL THOSE
20 METALS ARE IN BACKGROUND CONCENTRATIONS. WE ALSO SAMPLED --
21 WE ALSO SAMPLED FOR VOLATILES AND THEY WERE NOT DETECTED.

22 AS I ALREADY MENTIONED, THE HIGHEST
23 CONCENTRATIONS OF PESTICIDES WERE THE MONITORING WELL NUMBER
24 4, RT-MW-04, WHICH IS A DIRECT DOWNGRAIENT OF THE SOURCE
25 AREA. AND -- AND PESTICIDE CONCENTRATIONS DROPPED

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1 CONSIDERABLY AT LOCATIONS FURTHER DOWNGRAIENT OF THAT
2 MONITORING WELL 04.
3 ON THIS MAP WE CAN SEE MONITORING WELL NUMBER
4 4 PROBABLY HERE WHERE THE HIGHEST CONCENTRATION OF A TOTAL
5 B.H.C. ISOMERS IS. AND AS YOU CAN SEE, THERE IS HUNDRED
6 P.P.B. IN THAT AREA. AND AS WE MOVE DOWNGRAIENT, THE
7 CONCENTRATION DROPS -- DROPPED TO TEN AND ONE POINT ONE. SO
8 THE SOURCE AREA IS RIGHT HERE.

9 SO, AS I SAID, THE HIGHEST CONCENTRATIONS IN
10 MOST OF THE CONTAMINATION IS CLOSE TO THE SOURCE AREA, AND
11 THAT'S THE MUNICIPAL WELL -- MONITORING WELL 4.

12 SO WHAT WE ARE PROPOSING TONIGHT, OR THE
13 ALTERNATIVE THAT WE HAVE TO -- THAT WE HAVE RELATED, ARE
14 BASICALLY THE NO ACTION ALTERNATIVE OR WE HAVE -- THAT WE
15 ALWAYS HAVE TO EVALUATION AND BASICALLY DON'T DO ANYTHING AT
16 THIS POINT; OR THE ALTERNATIVE THAT WE ARE PROPOSING IS THE
17 EXTRACTION OF THE CONTAMINATED -- OF CONTAMINATED
18 GROUNDWATER FROM THE SURFICIAL AQUIFER, TREATMENT BY CARBON
19 ADSORPTION, AND DISCHARGE TO AN INFILTRATION GALLERY.

20 IN -- THIS FIGURE I'M SHOWING IS A DRAWING OF
21 HOW THE -- THIS ALTERNATIVE WILL WORK. BASICALLY, THE
22 GROUNDWATER WILL BE EXTRACTED BY A PUMP WELL. IT WILL GO UP
23 TO THE UNIT HERE. WE WILL HAVE A PREFILTER THAT WILL TAKE
24 OUT THE PARTICLES AND THEN WILL GO THROUGH THE CARBON
25 TREATMENT.

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1 THERE IS A SAMPLE PORT AT THE END OF THAT
2 CARBON UNIT AND THAT -- THAT WILL BE TO VERIFY IF THE
3 PESTICIDES OR THE CONTAMINATION HAVE BEEN REMOVED PRIOR TO
4 DISCHARGE BACK INTO GROUND TO THE INFILTRATION GALLERIES.

5 THIS SLIDE BASICALLY SHOWS SOME OF THE BENEFIT
6 OF DOING THIS PROPOSED INTERIM ACTION. IT WILL -- BASICALLY
7 WILL BEGIN -- BEGIN EXTRACTION OF THE HIGHLY CONTAMINATED
8 GROUNDWATER WHILE THE R.I./F.S. PROCESS FOR THE ENTIRE
9 OPERABLE UNIT IS COMPLETED; AND IT WILL REDUCE THE MIGRATION
10 OF THOSE CONTAMINANTS INTO LOWER AQUIFERS.

11 AS I ALREADY MENTIONED, EXTRACTING THE
12 GROUNDWATER FROM THE SURFICIAL AQUIFER, TREAT IT WITH
13 CARBON, AND DISCHARGE IT TO AN INFILTRATION GALLERY, THE
14 ESTIMATED PRESENT WORTH COST OF THAT IS FIVE HUNDRED
15 EIGHTEEN THOUSAND, NINE HUNDRED EIGHT DOLLARS (\$518,908.00).
16 THAT INCLUDES OPERATION AND MAINTENANCE FOR TWO YEARS.

17 JUST TO MENTION THE STATUS OF THE ENTIRE
18 OPERABLE UNIT 5. WE FINALIZED THE REMEDIAL INVESTIGATION
19 REPORT. WE STILL NEED TO -- WE STILL NEED TO FINALIZE THE
20 BASELINE -- BASELINE RISK ASSESSMENT. WE STILL NEED TO
21 FINALIZE THE FEASIBILITY STUDY REPORT.

22 AFTER THAT WE WILL HAVE ANOTHER PROPOSED PLAN
23 FACT SHEET, AND ANOTHER MEETING LIKE THIS TO PROPOSE THAT
24 FINAL ACTION FOR THE ENTIRE OPERABLE UNIT, AND THEN AFTER
25 THAT WE WILL HAVE THE FINAL RECORD OF DECISION, OR ROD, THAT

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1 WILL COVER THE ENTIRE OPERABLE UNIT 5; MEANING THE MCIVER
2 DUMP AREA, THE ROUTE 211 AREA WITH ALL THE AQUIFERS.
3 THAT'S ALL I HAVE TO PRESENT. IF THERE ARE
4 ANY QUESTIONS, WE WILL BE MORE THAN GLAD TO TAKE THEM. YES?
5 CLAUDIA MADLEY: CAN YOU TELL US WHAT THE
6 CONCENTRATIONS WERE FOR THE VARIOUS B.H.C. ISOMERS AND FOR
7 D.D.E. AND WHAT THE ASSOCIATED M.C.L. LEVELS OF THOSE
8 VARIOUS CHEMICALS?

9 LUIS FLORES: WELL, LET ME MENTION THAT THE
10 ONLY M.C.L. THAT WE -- THAT WE HAVE WERE B.H.C.'S FOR GAMMA
11 WHICH IS LINDANE, AND IT'S POINT TWO PART PER BILLION. AND
12 THAT B.H.C. WAS NOT EXCEEDED IN THE SURFICIAL AQUIFER IN ANY
13 OF THE SAMPLES.

14 WE HAVE -- ONE HAD ON THIS MONITORING WELL
15 NUMBER 4 OF TOXAPHENE, AND REALLY HIGH CONCENTRATION, I
16 WOULD SAY, IN LIKE '84 OR '85, P.P.B. BUT THAT'S -- WE SAW
17 IT AS A KIND OF ---

18 WE'RE NOT REALLY SURE THAT TOXAPHENE IS REALLY
19 IN THERE 'CAUSE THAT WELL WAS SAMPLED BEFORE THAT, AND
20 DETECTION OF TOXAPHENE WAS NOT DETECTED. THEN WE WENT BACK
21 AND RESAMPLED AFTER THIS '80-- IN '84 THAT WE GOT, AND AGAIN
22 IT WAS NOT DETECTED. WE LOOKED AT SOME OF THE DATA THAT IS
23 PRODUCED FROM THE SAMPLES AND WE FOUND THAT THERE ARE THINGS
24 THAT ARE NOT ---

25 IT'S KIND OF DIFFICULT TO SAY THAT IT'S REALLY

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1 TOXAPHENE, SO AT THIS POINT WE'RE NOT REALLY SURE IF

2 TOXAPHENE IS THERE OR NOT.

3 CLAUDIA MADLEY: WHAT ABOUT --

4 LUIS FLORES: (INTERPOSING) IT WAS NOT

5 DETECTED -- I'M SORRY. IT WAS NOT DETECTED IN ANY OTHER --

6 IN ANY OTHER WELL OR IN THE WHOLE -- IN THE WHOLE SITE.

7 CLAUDIA MADLEY: HOW ABOUT D.D.E.?

8 LUIS FLORES: THE CONCENTRATION OF D.D.E.'S

9 WERE -- WERE REALLY LOW. I PROBABLY ---

10 BILL OSTEN: I'LL DIG THAT UP FOR YOU, LUIS.

11 (PERUSING DOCUMENTS.)

12 LUIS FLORES: I THOUGHT I HAD A TRANSPARENCY

13 WITH -- WITH THE CONCENTRATIONS.

14 BILL OSTEN: D.D.E. OKAY. THIS ISN'T RIGHT.

15 THEY WERE ALL LESS THAN -- I'M TRYING TO FIND THE HIGHEST

16 OUT OF THAT -- OUT OF THAT BUNCH. WELL, HERE'S ONE AT POINT

17 ZERO ZERO FOUR SIX PARTS PER BILLION.

18 CLAUDIA MADLEY: WHY ARE YOU GOING TO CLEAN

19 THE GROUNDWATER THEN?

20 LUIS FLORES: I'M SORRY?

21 CLAUDIA MADLEY: WHY ARE YOU GOING TO CLEAN

22 THE WATER IF IT DOES NOT EXCEED THE MAXIMUM CONTAMINANT

23 LEVEL?

24 LUIS FLORES: WELL, THE -- WITH THE

25 CONTAMINANTS THAT -- THAT HAS -- THAT HAVE PROMULGATED

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1 M.C.L. OR SPECIFIC STANDARD, WE DON'T EXCEED ANY OF THOSE.
2 WHEN WE DID PRELIMINARY CALCULATIONS FOR THE RISK
3 ASSESSMENT, WE CALCULATED THE RISK OF DRINKING THAT WATER
4 FOR A PROLONGED PERIOD OF TIME. THEY EXCEED THAT NUMBER.

5 WE ARE -- WE DON'T HAVE -- WE ARE NOT -- OR I
6 AM NOT PRESENTING WHAT THOSE NUMBERS ARE RIGHT NOW BECAUSE
7 WE HAVE NOT FINALIZED THE RISK ASSESSMENT. ALL THAT IS
8 GOING TO BE PRESENTED IN THE -- WHEN WE DO THE FINAL ACTION
9 FOR THIS OPERABLE UNIT.

10 AND AT THIS POINT AT THIS INTERIM ACTION, WHAT
11 WE WANT TO DO IS JUST START PUMPING THAT. WE KNOW THAT
12 THOSE ARE THE HIGHEST CONCENTRATIONS IN THE WHOLE -- IN THE
13 WHOLE SITE. WE JUST WANT TO START PUMPING THAT NOW INSTEAD
14 OF WHEN WE HAVE ALL DOCUMENTS FINISHED; AND SO THAT WE CAN
15 MOVE AHEAD WITH THAT.

16 WHEN WE HAVE THE FINAL -- WHEN WE PRESENT THE
17 FINAL REMEDY FOR THE WHOLE O.U. 5, WE WILL HAVE THOSE
18 CLEANUP NUMBERS AND WE WILL HAVE THE GROSS NUMBERS. THE
19 INTENT OF THIS ACTION IS NOT TO -- WE DON'T THINK THAT WE
20 ARE GOING TO CLEAN UP THE AQUIFERS IN TWO YEARS. WE BELIEVE
21 THAT WE ARE GOING TO ROLL UP TO -- ROLL OVER TO THE FINAL
22 REMEDY AND -- AND THAT WAY WE WILL CLEAN UP THE AQUIFER.

23 DIANE BARRETT: COME ON, ASK SOME MORE
24 QUESTIONS.

25 DR. ROBERT MOABS: THE ____ (INAUDIBLE) AT THE

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1 LAKE. INAUDIBLE) ____ TOXAPHENE, B.E.K. AND B.H.C. WERE NOT
2 ____ (INAUDIBLE). HE WAS ABLE TO GET SOME IN THE OTHER END OF
3 THE LAKE; NOT THAT END OF THE LAKE.

4 (DIANE BARRETT CONFERRING WITH COURT REPORTER
5 DURING DR. MOABS' STATEMENT.)

6 (SPEAKER UNKNOWN): THAT'S -- THAT'S THE SAME,
7 ROUTE 211.

8 DAVID WARNER: IS THIS THE TIME?

9 DIANE BARRETT: YES. I HAVE BEEN TALKING WITH
10 THE COURT REPORTER HERE. PEOPLE HAVE BEEN FORGETTING TO
11 GIVE THEIR NAMES, SO IF YOU'LL PLEASE GIVE YOUR NAME, DAVID.

12

13 CLAUDIA MADLEY: THE SECOND GENTLEMAN WAS
14 DOCTOR ROBERT MOABS.

15 COURT REPORTER: THANK YOU.

16 DAVID WARNER: I'M DAVID WARNER. I'M A
17 CONSULTANT FOR MOOREFORCE, MOORE HELPING SYSTEMS FOR A CLEAN
18 ENVIRONMENT -- YEAH, MOORE FOR A CLEAN ENVIRONMENT,
19 SOMETHING LIKE THAT.

20 WE'VE GOT A FEW STATEMENTS TO MAKE IN
21 REFERENCE TO THE PROPOSED INTERIM ACTION OF THE E.P.A. AND
22 I'M GOING TO PUT MY GLASSES ON.

23 I GUESS, FIRST OF ALL, WE BASICALLY HAVE THREE
24 COMMENTS. THE FIRST COMMENT IS, FIRST OF ALL, WE WANT TO --
25 ON BEHALF OF MOOREFORCE, WE STRONGLY ENDORSE E.P.A.'S

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1 INTENTIONS TO BEGIN INTERIM ACTION AT THE ROUTE 211 AREA
2 SITE, AND MOOREFORCE ENCOURAGES THE AGENCY TO EXPEDITE
3 NEGOTIATIONS AND BEGIN ACTIONS AS SOON AS POSSIBLE.

4 WITH THAT, HOWEVER, WE FEEL THE SCOPE OF THE
5 PROPOSED INTERIM ACTION IS TOO LIMITED. TOO LIMITED FOR
6 INTERIM ACTION TO GO THROUGH ALL THE DESIGN AND ENGINEERING
7 IT'S GOING TO TAKE TO DO THE PROPOSED ACTION AND NOT DO A
8 BIT MORE TO ACHIEVE THE OBJECTIVES THAT WERE PUT UP ON THE
9 SCREEN A MOMENT AGO.

10 THE -- ONE OF THE QUESTIONS THAT WE HAVE --
11 AND WE'LL SUBMIT OUR COMMENTS AND QUESTIONS IN WRITING, BY
12 THE WAY, AS WELL AS MY COMMENTS HERE TONIGHT.

13 THE REMEDIAL INVESTIGATION HAS REVEALED THAT
14 CONTAMINATED GROUNDWATER HAS BEEN DETECTED NOT ONLY IN THE
15 SURFICIAL AQUIFER, WHICH IS THE SUBJECT OF TONIGHT'S
16 MEETING, BUT ALSO IN THE UPPER AND LOWER SECTIONS OF THE
17 UPPER BLACK CREEK AQUIFER AND THE LOWER AQUIFER -- THE LOWER
18 BLACK CREEK AQUIFER, AS WELL.

19 AND WE JUST RAISE THE QUESTION THAT THIS
20 ACTION, WHICH IS DIRECTED AT JUST THE SURFICIAL AQUIFER, BE
21 JUSTIFIED THAT JUST THE SURFICIAL AQUIFER BE ADDRESSED, WHEN
22 WE KNOW THERE ARE HYDRAULIC LINKAGES BETWEEN THEM ALL -- THE
23 THREE AQUIFERS THAT HAVE BEEN DISCUSSED, AND THE
24 CONTAMINATION HAS INDEED MIGRATED THROUGH THOSE AQUIFERS.
25 WE JUST WANT TO HAVE THAT QUESTION ADDRESSED -- OR A

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1 RESPONSE ADDRESSED, WHY JUST THE SURFICIAL AQUIFER FOR THIS
2 INTERIM ACTION.

3 IN ADDITION, AND CARRYING ON FROM THAT SAME
4 COMMENT, IF -- IF THE SURFICIAL AQUIFER IS TO BE THE SUBJECT
5 OF THE INITIAL INTERIM ACTION, AND WE UNDERSTAND THAT ONE --
6 ONE WELL WILL BE CONVERTED FROM A MONITORING WELL TO AN
7 EXTRACTION WELL, IS THAT IN -- WELL, WHAT WELL IS --

8 LUIS FLORES: (INTERPOSING) THERE IS A WELL
9 THAT'S USED FOR THE PUMP TEST.

10 DAVID WARNER: OKAY. THE PUMP TEST WELL THAT
11 HAS BEEN ASSIGNED WILL BE CONVERTED TO AN EXTRACTION WELL,
12 AND THEN A CARBON FILTRATION SYSTEM WOULD BE DESIGNED AND
13 PUT ON LINE WITH THAT WELL TO TREAT THAT -- THE HOT SPOT
14 AREA IN THE SURFICIAL AQUIFER, AS WE UNDERSTAND IT.

15 OUR POINT IN LOOKING AT THAT -- AND, AGAIN, WE
16 THINK THAT'S A WONDERFUL IDEA AND IT'S GOOD TO GO AHEAD
17 QUICKER, BUT IF E.P.A. IS GOING TO GO AHEAD WITH THAT
18 INTERIM ACTION, WHY NOT TAKE IT THEN -- AND YOU'RE GOING TO
19 DESIGN A SMALLER SCALE TREATMENT PROCESS ANYHOW TO HOOK INTO
20 THAT EXTRACTION WELL -- WHY NOT TAKE A BIGGER CHUNK OF
21 WHAT'S IN THE SURFICIAL AQUIFER?

22 THE REMEDIAL INVESTIGATION HAS INDICATED THAT,
23 AGAIN, THEY KNOW PRETTY MUCH, ACCORDING TO THE DATA, WHERE
24 THE PROBABLE HYDRAULIC LINKAGES ARE BETWEEN THE AQUIFERS;
25 THEREFORE, WE HAVE AN IDEA -- THE SCIENTISTS HAVE AN IDEA OF

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1 WHERE THE SURFICIAL AQUIFER IS LINKED TO THE NEXT -- TO THE
2 UPPER -- UPPER BLACK CREEK AQUIFER. SO WE KIND OF KNOW
3 WHERE THAT IS. WE KNOW WHERE THE HOT SPOTS ARE.

4 WE PRESUME THAT WELL WILL BE RIGHT IN THE
5 MIDDLE OF ONE OF THE HIGHER CONCENTRATIONS FOUND IN THE
6 SURFICIAL AQUIFER. OUR STATEMENT IS, IF YOU'RE GOING TO GO
7 THAT FAR WITH THE FRONT END COST OF DOING THAT WITH ONE
8 WELL, WHY NOT TAKE A BIGGER CHUNK OF THAT CONTAMINATED HOT
9 SPOT IN THE SURFICIAL AQUIFER WHILE YOU'RE DOING THAT?

10 THAT'S NOT SAYING WHAT'S GOING TO HAPPEN WITH
11 THE FINAL. THE ENTIRE PERIPHERY WILL BE ADDRESSED IN SOME
12 WAY. BUT IF YOU'RE GOING WITH ONE WELL, OUR QUESTION IS WHY
13 NOT GO DOWN WITH TWO OR THREE TO DO A COUPLE OF THINGS.
14 AGAIN, THE OBJECTIVE OF KEEPING THE CONTAMINANT FROM
15 MIGRATING; THIS WOULD ADDRESS THAT EVEN BETTER THAN ONE WELL
16 WOULD.

17 YOU HAVE -- AND COST-WISE, OVER THE LONG RUN,
18 IF WE COULD KEEP CONTAMINANTS IN THE AQUIFER -- IN THE
19 SURFICIAL AQUIFER FROM MIGRATING DOWN TO THE LOWER ONES, IT
20 COULD POSSIBLY BE MUCH REDUCED FROM TRYING TO TREAT HIGHER
21 VOLUMES OF WATER LESS THOSE CONTAMINANTS IN THE GROUNDWATER
22 LATER IN THE LOWER AQUIFERS.

23 SO PERHAPS AN ADDITIONAL WELL PLACEMENT NEAR
24 THE AREA WHERE THAT HYDRAULIC CONNECTION HAS BEEN NOTED TO
25 BE MIGHT BE PRUDENT AS WELL AS JUST PERHAPS EVEN ANOTHER

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1 WELL YET JUST TO BUILD SOME CAPACITY, A LITTLE MORE CAPACITY
2 INTO WHAT HAS BEEN PROPOSED.

3 SO THERE'S A LOT OF VALUE -- A LOT OF FUTURE
4 VALUE PUT IN TO -- IF YOU'RE GOING TO GO THIS FAR WITH AN
5 EXTRACTION AND A TREATMENT, WHY NOT DO A LITTLE MORE, GET --
6 GET -- GET A BIGGER PART OF THE BULK, GET A BIGGER PART OF
7 THAT SURFICIAL CONTAMINANT PLUME AND HEAD OFF PROBLEMS THAT
8 WILL HAPPEN LATER ON SHOULD THESE CONTAMINANTS MIGRATE.

9 AND SO THAT WAS PART B OF OUR CONCERN, NUMBER
10 2.

11 AND THEN JUST SOME OTHER REASONS FOR THIS,
12 JUST TO BACK IT UP A LITTLE BIT. THE REMEDIAL INVESTIGATION
13 HAD CALCULATED THE FLOW OF GROUNDWATER MOVEMENT HORIZONTALLY
14 AND VERTICALLY. AND IN A SURFICIAL AQUIFER, THE WATER IS
15 MOVING VERY RAPIDLY AT SIX HUNDRED AND THIRTY-FIVE FEET, I
16 BELIEVE, A YEAR, WAS NOTED ITS HORIZONTAL MOVEMENT WITHIN
17 THE SURFICIAL AQUIFER. THAT'S MOVING PRETTY FAST. AND,
18 ALSO, I BELIEVE THE VERTICAL IS ALSO QUITE -- QUITE RAPID AS
19 WELL.

20 AND, AGAIN, PRUDENCE MIGHT SAY IF WE -- IF
21 WE'RE GOING TO PUT IN ONE WELL WITH A TREATMENT SYSTEM,
22 LET'S TACK ON ANOTHER CANISTER AND PUT ANOTHER WELL OR TWO
23 DOWN AND -- AND -- AND CAPTURE A BIGGER PIECE OF IT RIGHT
24 NOW WHILE WE'RE GOING IN WITH THIS INTERIM ACTION.
25 OTHERWISE, THERE WILL BE SOME SUBSTANTIAL DELAYS BEFORE THE

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1 FINAL ROD AND REMEDIATION SYSTEMS ARE PUT IN PLACE; PERHAPS
2 A YEAR OR TWO, THE WAY THESE THINGS GO. SO WE UNDERSTAND
3 THAT TO BE THE CASE.

4 SO, AGAIN, WE'RE SUPPORTIVE. IF YOU'RE GOING
5 TO PUT DOWN ONE, LET'S PUT DOWN A COUPLE MORE AND HEAD OFF
6 SOME FUTURE POSSIBILITIES OF CONTAMINANT MIGRATION.

7 AND, FINALLY, THIS FAIRLY SUBSTANTIAL
8 CHARACTERIZATION OF -- OF THE SOILS OF THE GROUNDWATER
9 AQUIFER AT THE ROUTE 211 AREA SITE, THE INVESTIGATION'S
10 REVEALED THE VERTICAL HYDRAULIC CONNECTIONS BETWEEN THE
11 AQUIFERS.

12 WE HAVE A QUESTION. WHAT'S THE POSSIBILITY
13 THAT THE INSTALLATION OF MONITORING WELLS HAS CONTRIBUTED TO
14 SOME OF THE VERTICAL CROSS-CONTAMINATION OF THESE AQUIFERS?

15 AND BEYOND THAT, WHAT ABOUT HISTORICAL WELLS?
16 WE KNOW THAT MUNICIPAL WELL NUMBER 13 IS IN THE LOWER BLACK
17 CREEK AQUIFER, SOMEWHAT DOWNGRAIENT FROM THIS AREA, BUT IN
18 THE PATH OF WHAT WE BELIEVE TO BE SOME OF THE CONTAMINANT
19 PLUMES THAT HAVE BEEN IDENTIFIED IN THE REMEDIAL
20 INVESTIGATION. AND WE'RE CONCERNED ABOUT SOME OF THE
21 HYDRAULIC DYNAMICS OF SEVERAL THINGS.

22 FIRST OF ALL, THERE SEEMS TO BE KIND OF A PIN
23 CUSHIONING GOING ON; THERE'S BEEN A LOT OF MONITORING WELLS
24 PUT DOWN, A LOT OF SOIL BORINGS TAKEN, BOTH WITH E.P.A. AND
25 REMEDIAL INVESTIGATION. THERE ARE PRE-EXISTING WELLS,

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1 INCLUDING THE MUNICIPAL PUMPING WELL THAT WERE IN PLACE.
2 THERE SEEMS TO BE A LOT OF CONDUITS FOR -- FOR GROUNDWATER
3 MOVING VERTICALLY THROUGH THE AQUIFER SYSTEM.

4 SO WE'RE VERY CONCERNED ABOUT THAT AND WE URGE
5 THAT ANY REMEDIATION ACTIONS TAKEN, EVEN AS INTERIM, GIVE
6 CAREFUL CONSIDERATION TO CONSTRUCTION OF WHATEVER TREATMENT
7 SYSTEMS ARE PUT ON LINE TO TRY TO PREVENT ANY CROSS-
8 CONTAMINATION VERTICALLY BETWEEN THE AQUIFERS, IF AT ALL
9 POSSIBLE.

10 AND JUST AS A SIDE NOTE TO THAT, I UNDERSTAND
11 MUNICIPAL WELL 13 IS PUMPING AGAIN AS OF LAST NOVEMBER, AND
12 THERE MAY BE SOME HYDRODYNAMIC EFFECTS TO THE GROUNDWATER OF
13 THAT PUMPING.

14 AND, ALSO, THAT WELL ITSELF COMING THROUGH ALL
15 THE AQUIFERS OF CONCERN OF THAT POSSIBLY PERHAPS
16 HYDRAULICALLY SUCKING DOWN PERHAPS CONTAMINANTS FROM UPPER
17 OR LOWER AQUIFERS OR COMING ALONG THE WELL CASING IS A
18 POTENTIAL CONDUIT FOR CROSS-CONTAMINATION. SO, AGAIN, WE
19 JUST WANT TO MAKE NOTE OF THAT.

20 AND, AGAIN, THE QUESTIONS THAT HAVE JUST BEEN
21 ASKED WE'LL BE HAPPY TO PUT IN WRITING AND PRESENT THOSE --
22 OR WE'LL SUBMIT THOSE BACK TO YOU.

23 DIANE BARRETT: (TO MR. FLORES) DO YOU WANT
24 TO RESPOND TO THAT?

25 LUIS FLORES: DO YOU WANT A RESPONSE TO THAT

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1 NOW?

2 DAVID WARNER: YOU'RE WELCOME TO RESPOND.

3 LUIS FLORES: WELL, WHAT WAS THE FIRST ONE?

4 (LAUGHTER) OKAY. WHY ARE WE DOING THIS --

5 DAVID WARNER: THE SURFICIAL AQUIFER IS THE

6 FIRST QUESTION.

7 LUIS FLORES: WELL, TO DO THIS IN THIS

8 SPECIFIC AQUIFER -- AN AQUIFER AT THIS POINT, IT SEEMS LIKE

9 SOMETHING SIMPLE ENOUGH AND IT WILL NOT REQUIRE A LOT OF

10 DESIGN AND A LOT OF MODELING TO BE DONE. SO THAT'S --

11 THAT'S BASICALLY THE REASON. IT'S SIMPLE ENOUGH TO DO IT.

12 WE -- WE KNOW THAT THE HIGHEST CONCENTRATIONS

13 ARE THERE. SO BASICALLY THAT'S -- IF WE WANT TO CALL IT

14 THE SOURCE OF THE -- THE SOURCE IN THE GROUNDWATER AND WE

15 WANT TO TAKE CARE OF THAT. AND DOING A DESIGN TO TAKE CARE

16 OF THE WHOLE THREE AQUIFERS IS GOING TO TAKE A LITTLE MORE

17 EFFORT THAN THIS AND IT WILL TAKE MORE TIME, SO WE DECIDED

18 TO GO AHEAD AND DO THIS AT THIS POINT NOW.

19 AND WHAT WAS THE OTHER QUESTION? OH, WHY ONLY

20 ONE WELL? I WOULD SAY THAT WE WILL CONSIDER THAT. BUT AT

21 THIS POINT, WHAT WE ARE PROPOSING IS ONE WELL, BUT WE WILL

22 DO SOME MODELING AND COMPILATIONS TO CHECK THE BENEFIT OF

23 RESTORING ANY OTHER WELLS IN THE SURFICIAL AQUIFER AND --

24 AND WE DEFINITELY WILL CONSIDER THAT.

25 DAVID WARNER: I GUESS I'D JUST LIKE TO ADD A

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1 COMMENT HERE AT THIS POINT THAT -- THAT WE ASSUME, I GUESS,
2 THAT -- THAT WHETHER THIS ENDS UP BEING ONE WELL, ALTHOUGH
3 WE DO PREFER TO SEE MORE, GETTING BIGGER CHUNKS OF THE HOT
4 SPOT IN THE SURFICIAL AQUIFER, THAT WHATEVER REMEDIATION
5 TAKES PLACE IS GOING TO BE THE CORE OF THE FINAL ROD AT ANY
6 RATE.

7 LUIS FLORES: RIGHT.

8 DAVID WARNER: SO OUR POINT IS, IF YOU'RE
9 GOING TO GO IN EARLY, LET'S GO IN EARLY, YOU KNOW,
10 SUBSTANTIALLY, AND DO MAKE A DIFFERENCE IN THE -- IN THE
11 SOURCE OF THE GROUNDWATER CONTAMINATION RIGHT NOW AT THIS
12 POINT.

13 AND WE HAD SOME LAST QUESTIONS ABOUT OUR
14 CONCERNS ABOUT CROSS-CONTAMINATION IN VERTICAL WELLS.

15 LUIS FLORES: (TO MR. OSTEN) DO YOU WANT TO
16 ADDRESS THAT?

17 BILL OSTEN: I WILL. THERE -- I DON'T
18 BELIEVE THAT THERE ARE ANY CROSS-CONNECTIONS AS A RESULT OF
19 THE REMEDIAL INVESTIGATIONS VARIOUS STAGES -- E.P.A.'S OR
20 ANYBODY ELSE'S -- THAT WOULD BE ANY SORT OF A PERMANENT
21 CONNECTION. I CAN'T SPEAK TO THAT WITH ABSOLUTE CERTAINTY,
22 BUT OUR STANDARD PROCEDURES ARE DESIGNED TO LIMIT THE AMOUNT
23 OF CROSS-CONNECTION THAT WILL OCCUR WHEN -- WHEN -- WHEN
24 IT'S GOING THROUGH MULTIPLE AQUIFERS.

25 AND I KNOW THAT ANY WORK THAT'S DONE AS A PART

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1 OF OUR REMEDIAL INVESTIGATION IN THE REGION FOLLOWS THE
2 E.P.A.'S STANDARD PROCEDURES. THERE'S A WHOLE LENGTHY
3 SUBSTANTIAL MANUAL THAT DEALS WITH EVERYTHING FROM WELL
4 CONSTRUCTION TO SAMPLING AND STREAMS, AND CERTAINLY THE
5 ISSUE OF CROSS-CONNECTION IS OF CONCERN TO US. AND TO THE
6 EXTENT PRACTICABLE DURING AN INVESTIGATION, OUR -- OUR
7 PROCEDURES ARE DESIGNED TO MINIMIZE THAT.

8 SO THAT WOULD BE THE LESS LIKELY OF THE TWO
9 POSSIBILITIES -- TWO BROAD POSSIBILITIES THAT YOU SUGGESTED.

10 THE SECOND ONE IS A CONCERN ABOUT THE
11 MUNICIPAL WELL AND SOME OF THE PRIVATE WELLS THAT ARE IN THE
12 AREA OF GROUNDWATER CONTAMINATION THAT'S RELATED TO THE 211
13 SITE.

14 A COUPLE OF POINTS TO MAKE ABOUT THAT. ONE IS
15 THAT THOSE WELLS ARE IN AREAS WHERE THE GROUNDWATER
16 CONTAMINATION IS -- IS MUCH LOWER THAN WHAT WE'RE TALKING
17 ABOUT IN A SURFICIAL AQUIFER, SO THAT THE CROSS-CONNECTION
18 SITUATION IS NOT AS -- AS CRITICAL PERHAPS AS IT WOULD BE IF
19 -- IF THERE WAS A CROSS-CONNECTION BETWEEN THE SURFICIAL
20 WHERE THE CONCENTRATIONS ARE SUBSTANTIALLY HIGHER THAN IN
21 SOME OF THE OTHER AQUIFERS.

22 NOW WE KNOW THAT IN MUNICIPAL WELL 13 THERE IS
23 A CONNECTION, AND THERE MAY BE IN SOME OF THE OTHER PRIVATE
24 WELLS. I DON'T THINK THAT THE CONSTRUCTION OF ALL OF THESE
25 WELLS HAS BEEN -- BEEN FULLY CHARACTERIZED AND -- AND -- AND

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1 THAT MIGHT NOT EVEN BE -- BE POSSIBLE.

2 HOWEVER, IN TERMS OF THE MOVEMENT OF
3 CONTAMINATION FROM ONE AQUIFER TO A LOWER AQUIFER, IT'S
4 FAIRLY CLEAR -- AND IT MAY BE ENTIRELY CLEAR, BUT I'LL --
5 I'LL NOT GO TOO FAR OUT ON A LIMB.

6 IT'S FAIRLY CLEAR FROM THE REMEDIAL
7 INVESTIGATION THAT THE PRIMARY CROSS-CONNECTION BETWEEN THE
8 AQUIFERS IS A RESULT OF NATURAL DISCONTINUITIES ANYWHERE IN
9 THE LAYERS THAT SEPARATE THOSE AQUIFERS IN THE AREAS WHERE
10 THOSE LAYERS THAT SEPARATE THE AQUIFERS MIGHT BE -- BE THIN
11 OR MISSING OR -- OR THE HYDRAULIC PROPERTIES OF THOSE LAYERS
12 ARE SUCH THAT IT'S MAYBE A LITTLE EASIER FOR WATER TO MOVE
13 FROM ONE AQUIFER TO ANOTHER IN THOSE PLACES.

14 AND THAT, AT LEAST IN AN AREA OF THE CORE
15 GROUNDWATER CONTAMINATION -- THE SURFICIAL, I'M TALKING
16 ABOUT, IN THE UPPER BLACK CREEK, THE LOWER PART OF THE UPPER
17 BLACK CREEK, AND THE LOWER BLACK CREEK, WHERE THE
18 CONTAMINATION THERE IS PARTICULARLY SIGNIFICANT, THERE ARE
19 AREAS THAT ARE A MUCH GREATER EXTENT THAN SAY -- SAY EVEN --
20 EVEN A DOZEN OR TWO DOZEN OR THREE DOZEN INDIVIDUAL PRIVATE
21 WELLS WOULD BE WHERE -- WHERE THESE CONFINING LAYERS ARE --
22 ARE -- THAT WOULD IMPEDE MOVEMENT OF WATER FROM ONE AQUIFER
23 TO ANOTHER ARE -- ARE MISSING.

24 SO THAT EVEN THOUGH SOME OF THE PRIVATE WELLS
25 AND THE MUNICIPAL WELL 13 MAY BE CONSTRUCTED TO ALLOW

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1 VERTICAL MIGRATION OF WATER ACROSS THERE, I THINK IN
2 RELATIVE TERMS THAT'S A RELATIVELY SMALL CONTRIBUTION TO THE
3 -- TO THE BIG PICTURE OF HOW WATER IS GETTING FROM ONE
4 AQUIFER TO A -- TO A LOWER AQUIFER.

5 SO THAT WOULD BE MY -- MY ANSWER TO THAT. YOU
6 KNOW, IT'S ACKNOWLEDGING THAT THERE MAY BE A PROBLEM THERE,
7 BUT SAYING THAT IN -- IN -- IN RELATIVE TERMS IT'S A
8 RELATIVELY MINOR PROBLEM.

9 AND THEN ON THE MONITORING WELL CONSTRUCTION,
10 YOU KNOW, I'M NOT SAYING THERE'S NOT A POSSIBILITY THAT
11 THERE WAS SOME -- SOME SMALL DEGREE OF CONNECTION OF ALL THE
12 WELLS BEING DRILLED FOR WHATEVER REASON, YOU KNOW. I MEAN,
13 WORK OUT IN THE FIELD IS NOT ALWAYS PERFECT, BUT I THINK
14 THAT OUR WELLS -- WELLS ARE -- ARE -- ARE CONSTRUCTED TO --
15 TO MINIMIZE THAT -- THAT CROSS-CONTAMINATION.

16 DOCTOR ROBERT MOABS: I'M DOCTOR MOABS. I
17 SAID IN A MEDICAL JOURNAL IN 1948 THAT THESE POISONS WERE
18 CAPABLE OF CAUSING CANCER, AND I HAVE NAMED A LOT OF PEOPLE
19 WHO DIED WITH CANCER, BREAKDOWN FROM THE CHEMICAL PLANT.
20 AND I KNOW A LOT OF THE WORKERS AT GEIGY ALSO DIED OF
21 CANCER. NOBODY'S CHECKED THAT EVER. ALL OF THESE CHEMICALS
22 ARE NOW KNOWN TO BE CARCINOGENIC. D.D.E. WAS KNOWN TO BE
23 THAT WAY IN 1945. I THINK THE FOOD AND DRUG ADMINISTRATION
24 FOUND IT WAS CAPABLE OF CAUSING CANCER AND THEY DIDN'T DO
25 ANYTHING ABOUT IT.

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1 AGRICULTURISTS HAD TO DO IT. AGRICULTURE AND
2 PUBLIC HEALTH SUPPRESSED TOXICITY DURING THE FIRST TWENTY-
3 FIVE YEARS OF THE CHEMICAL AGE OF THE PESTICIDES. I GOT --
4 THE BOSTON GLOBE WROTE AN ARTICLE SAYING THAT EVERY COLLEGE
5 AND UNIVERSITY IN AMERICA FLUNKED ECOLOGY 101 DURING THE
6 FIRST TWENTY-FIVE YEARS THAT THEY WERE ON THE MARKET. AND
7 THAT'S TRUE, I BELIEVE.

8 LUIS FLORES: THANK YOU.

9 HARRY HUBERT: IM HARRY HUBERT WITH
10 MOOREFORCE. WE'VE BEEN FAMILIAR WITH THE MODULAR APPROACH
11 FROM OTHER GROUNDWATER CLEANUPS. AND PERHAPS IN THIS
12 CLEANUP, IT DEVIATES SITES WITH MORE THAN ONE EXTRACTION
13 WELL TO START WITH.

14 A PROVISION COULD BE MADE FURTHER DOWN THE
15 LINE AS THE CONTAMINANTS DECREASE DUE -- DUE TO YOUR
16 REMEDIATION EFFORTS, THAT AN ADDITIONAL WELL COULD BE TAKEN
17 OFF LINE IN THE FUTURE IF THE CONTAMINANTS ARE DROPPING
18 RAPIDLY.

19 BUT, AGAIN, WE DO BELIEVE IT'S VERY IMPORTANT
20 HITTING THEM HARD TO START WITH AND GO WITH MORE THAN ONE
21 WELL; AND MAYBE THEN LOOK AT THE OPTION OF MAYBE TAKING
22 SOMETHING OFF LINE A LITTLE BIT FURTHER IN THE FUTURE RATHER
23 THAN MAYBE ADDING SOMETHING ON LINE IF THE ONE WELL IS NOT
24 WORKING EFFICIENTLY TO START WITH.

25 LUIS FLORES: YEAH, WE WILL -- WE WILL

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1 CONSIDER THAT, TOO -- THE POSSIBILITY OF THAT WITH DAVID'S
2 COMMENT. YES?

3 CLAUDIA MADLEY: CLAUDIA MADLEY. IF YOU
4 ANTICIPATE THAT IT WILL TAKE LONGER THAN TWO YEARS OF
5 PUMPING AND TREATING THIS WATER IN ORDER TO FULFILL THE
6 CALCULATIONS OF THE RISK ASSESSMENT, HOW LONG DO YOU THINK
7 IT WILL TAKE TO REACH THAT LEVEL OF CLEANLINESS?

8 LUIS FLORES: WELL, WHAT WE'RE GOING TO DO IS
9 -- THIS INTERIM ACTION IS PROBABLY GOING TO -- I MEAN, I DO
10 NOT -- A PERCENT. IT'S GOING TO BE PART OF THE FINAL REMEDY
11 FOR THE SITE.

12 SO WHAT WE ARE PLANNING ON DOING IS -- IS AS
13 SOON AS WE HAVE THE FINAL RECORD OF DECISION FOR THE ENTIRE
14 OPERABLE UNIT, THIS INTERIM ACTION IS PART OF THAT REMEDY.
15 THIS -- THIS INTERIM RECORD OF POSITION IS JUST GOING TO GO
16 AWAY, THEN THE FINAL RECORD OF POSITION CAN -- IT'S GOING TO
17 -- IT'S GOING TO SUPPRESS --

18 DIANE BARRETT: (INTERPOSING) SUPERCEDE.

19 LUIS FLORES: -- SUPERCEDE THE OTHER ONE, AND
20 -- AND WHEN WE HAVE THE RISK -- THE FINAL RISK ASSESSMENT
21 AND THE FINAL NUMBERS, WHAT WE WILL DO WITH THOSE
22 COMPILATIONS TO DETERMINE HOW LONG MORE WE WILL HAVE TO KEEP
23 PUMPING TO REACH THOSE LEVELS.

24 BUT THE TWO YEARS WAS -- WAS -- WAS -- WAS
25 JUST A -- LIKE A MAXIMUM NUMBER OF YEARS THAT WE -- WE --

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1 WE PUT IN THERE BECAUSE WE KNOW WE'LL HAVE THE FINAL ROD
2 BEFORE THAT. SO IN THE EVENT THAT IT TAKES TWO YEARS, THEN
3 WE'LL ALREADY HAVE THE FINAL ROD.

4 CLAUDIA MADLEY: THE REASON I RAISE THE
5 QUESTION IS THAT IT HAS BEEN SUGGESTED THAT THE TWIN SITES
6 AND FARM CHEMICALS AND FAIRWAY SIX, THAT PUMP AND TREAT
7 WOULD BE SO INEFFICIENT AT CLEANSING ITEMS SUCH AS D.D.T.,
8 THAT IT COULD TAKE THOUSANDS OF YEARS TO DO IT THERE.

9 THAT'S WHY I WAS CURIOUS ABOUT THE TWO YEARS.
10 ARE WE TALKING ---

11 LUIS FLORES: YEAH. BASED ON THE -- YOU'RE
12 LOOKING AT THE NUMBERS OF THE RISK ASSESSMENT THAT WE HAVE,
13 D.D.T. IS NOT ABOVE ANY OF OUR NUMBERS.

14 BILL OSTEN: THAT WAS THE CONTAMINANT THAT
15 WAS -- WAS REALLY RESPONSIBLE FOR THOSE LONG CLEANUP TIMES,
16 WAS THE D.D.T. THERE. AND THAT'S NOT REALLY A PLAYER AT THE
17 211 SITE.

18 SO I -- WE'RE NOT LOOKING AT TIME FRAMES IN
19 THE THOUSANDS OF YEARS, BUT WE ARE LOOKING AT SOMETHING
20 THAT'S LIKELY OVER TWO YEARS. IT'S A LOT CLOSER TO TWO
21 YEARS THAN A THOUSAND; A LOT CLOSER.

22 LUIS FLORES: ANY OTHER QUESTIONS?

23 DIANE BARRETT: IF THERE ARE NO OTHER
24 QUESTIONS, THANK YOU VERY MUCH FOR COMING AND THANK YOU FOR
25 THE QUESTIONS THAT WERE ASKED. AND WE WILL BE RESPONDING TO

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1 YOUR COMMENTS THROUGH OUR RESPONSIVENESS SUMMARY AND A
2 RECORD OF DECISION WILL BE ISSUED WITHIN AT LEAST THIRTY
3 DAYS.

4 HARRY HUBERT: THE RECORD OF DECISION WILL BE
5 ISSUED WITHIN THIRTY DAYS?

6 DIANE BARRETT: WELL, ON THIS.

7 LUIS FLORES: FOR THIS INTERIM.

8 DIANE BARRETT: FOR THIS INTERIM, EXCUSE ME.

9 HARRY HUBERT: YOU'RE GOING TO GET LUIS INTO
10 TROUBLE TALKING LIKE THAT.

11 DIANE BARRETT: OKAY. THANK YOU VERY MUCH.
12 THE MEETING IS ADJOURNED.

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C E R T I F I C A T E

STATE OF NORTH CAROLINA

COUNTY OF CHATHAM

I, WANDA B. LINDLEY, CVR, A NOTARY PUBLIC FOR THE
STATE OF NORTH CAROLINA, DO HEREBY CERTIFY THAT THE
FOREGOING PUBLIC MEETING WAS TAKEN AND REDUCED TO
TYPEWRITING PERSONALLY BY ME; THAT THE FOREGOING 27 PAGES
CONSTITUTE A TRUE AND ACCURATE RECORD OF THE PROCEEDINGS TO
THE BEST OF MY KNOWLEDGE AND BELIEF.

IN WITNESS WHEREOF I HAVE HEREUNTO SET MY
HAND AND OFFICIAL SEAL ON THIS, THE 4TH DAY OF AUGUST, 1997.

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MooreFORCE, Inc. Comments
on Aberdeen Pesticide Dumps Sites,
Operable Unit #5

Proposed Groundwater Interim Action
Route 211 Area,
Aberdeen, North Carolina

1. MooreFORCE, Inc. strongly endorses EPA intentions to begin interim action at Route 211 Area, and encourages the agency to expedite negotiations and begin actions as soon as possible. However, the scope of the proposed interim action is too limited.
2. The Remedial Investigation has revealed that contaminated groundwater has been detected not only in the Surficial Aquifer, but also in the upper and lower sections of the Upper Black Creek Aquifer, and the Lower Black Creek Aquifer. Why aren't these other contaminated aquifers also being addressed at this time with this proposed interim action?
3. At a minimum, the scope of the interim action should be expanded by adding (an) additional well(s) to more fully capture the "hot spots" in the Surficial Aquifer, before the contaminants have an opportunity to further migrate into the lower aquifers. The front-end cost of the carbon filtration system design would not be greatly increased to expand the system's capacity. Nor should there be any delays in permitting an expanded action. Because the Remedial Investigation has found the groundwater is moving rapidly through the Surficial Aquifer, at 635 feet per year, it is imperative that an expanded interim action be undertaken as soon as possible. It is much easier to capture and treat the more concentrated contaminants in the Surficial Aquifer now rather than wait until the contaminants move down and spread out through the lower aquifers.
4. The Remedial Investigation has revealed vertical hydraulic connections between each of the aquifers characterized at the Route 211 Area site. What is the possibility that installation of monitoring wells has contributed to the cross-contamination of the various aquifers? Any proposed interim actions must be sensitive to this issue to prevent exacerbating the movement of contaminants down through the aquifers. Also, the restarting of Municipal Well #13, which may effect the dynamics of groundwater flow and contaminant migration must be taken into account.

Presented to EPA Region 4 at the July 10, 1997 Public Meeting in Aberdeen, North Carolina by David Warner of Warner Environment Management, Inc. on behalf of MooreFORCE, Inc. Please direct any questions or comments to David J. Warner at (803) 327-8921.

APPENDIX B
STATE CONCURRENCE

